MAY 1 1905

1904.
(SECOND SESSION.)

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

COMMISSION ON PRIMARY, SECONDARY, TECHNICAL, AND OTHER BRANCHES OF EDUCATION.

REPORT

OF THE

COMMISSIONERS,

MAINLY ON SECONDARY EDUCATION,

CONTAINING THE

SUMMARISED REPORTS, RECOMMENDATIONS,

AND

EXTENDED REPORTS OF THE COMMISSIONERS;

WITH ILLUSTRATIONS, ETC.

Printed under No. 3 Report from Printing Committee, 13 October, 1904.

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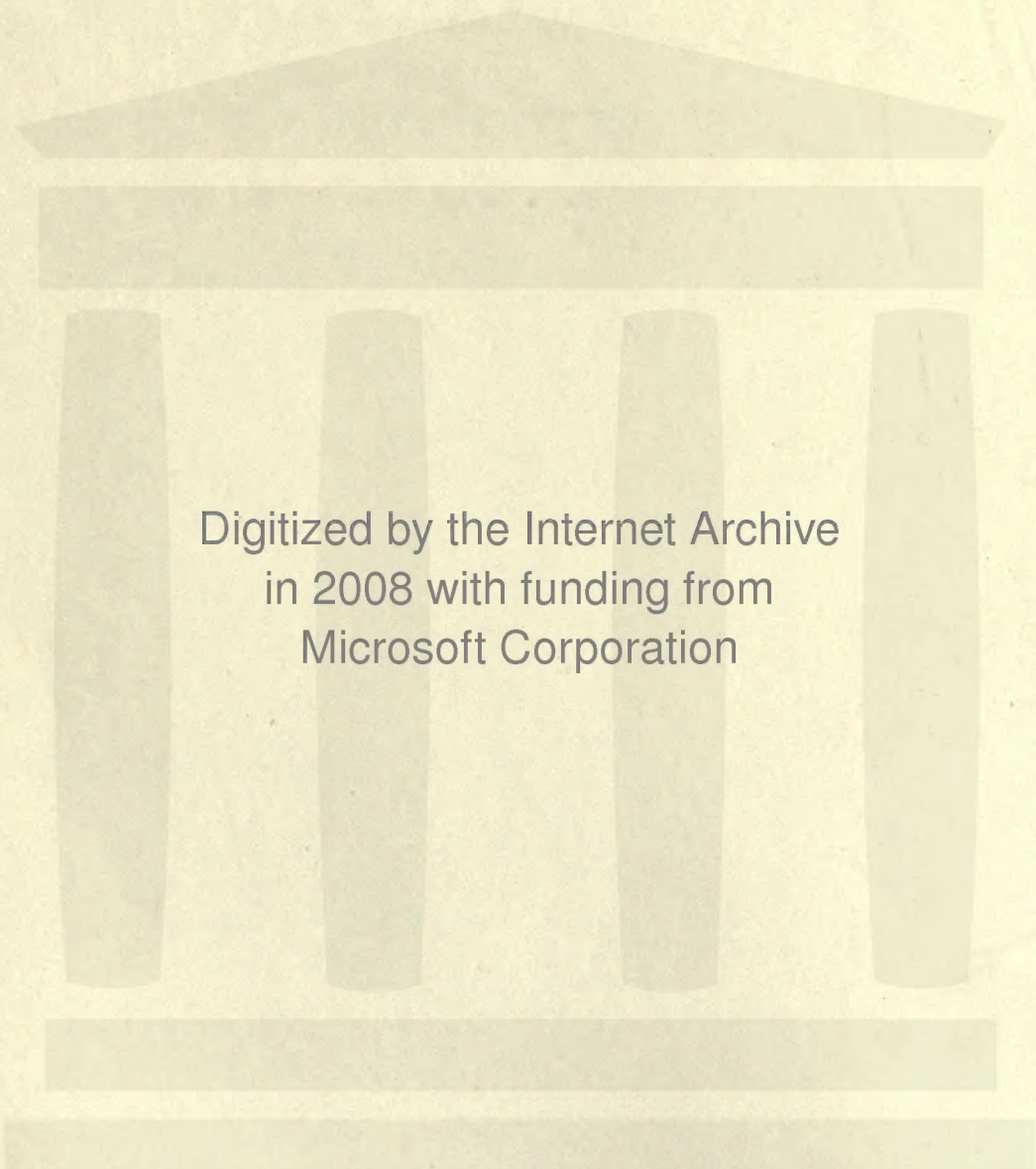

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1904

A. M. C.

By His Excellency The Honourable SIR FREDERICK MATTHEW DARLEY, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Lieutenant-Governor of the State of New South Wales and its Dependencies, in the Commonwealth of Australia.

To

GEORGE HANDLEY KNIBBS, Esquire, F.R.A.S., of Sydney, in the State of New South Wales,—

Greeting:—

KNOW you, That reposing great trust and confidence in your zeal, discretion, and integrity, I, SIR FREDERICK MATTHEW DARLEY, as Lieutenant-Governor of the State of New South Wales, with the advice of the Executive Council thereof, do, by these presents, appoint you, the said GEORGE HANDLEY KNIBBS, Esquire, F.R.A.S., in conjunction with JOHN WILLIAM TURNER, Esquire, to proceed to Europe and America for the purpose of inquiring into existing methods of instruction in connection with primary, secondary, technical, and other branches of education, and of recommending for adoption whatever improvements you may consider might with advantage be introduced into the State of New South Wales.

Initd.—J.M.G.

Given under my Hand and the Public Seal of the State, at Sydney, in New South Wales
(L.S.) aforesaid, this tenth day of April, in the year of Our Lord one thousand nine hundred and two, and in the second year of His Majesty's reign.

FREDK. M. DARLEY,
Lieutenant-Governor.

By His Excellency's Command,
JOHN SEE.

Entered on Record by me, in REGISTER OF PATENTS, No. 24, page 29, this eleventh day of April, one thousand nine hundred and two.

For the Colonial Secretary and Registrar of Records,
CRITCHETT WALKER,
Principal Under Secretary.

By His Excellency The Honourable SIR FREDERICK MATTHEW DARLEY, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Lieutenant-Governor of the State of New South Wales and its Dependencies, in the Commonwealth of Australia.

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JOHN WILLIAM TURNER, Esquire, of Sydney, in the State of New South Wales,—

Greeting:—

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FREDK. M. DARLEY,
Lieutenant-Governor.

By His Excellency's Command,
JOHN SEE.

Entered on Record by me, in REGISTER OF PATENTS, No. 24, page 28, this eleventh day of April, one thousand nine hundred and two.

For the Colonial Secretary and Registrar of Records,
CRITCHETT WALKER,
Principal Under Secretary.

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1904.

SECOND SESSION.

LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

COMMISSION ON PRIMARY, SECONDARY, TECHNICAL, AND OTHER BRANCHES OF EDUCATION.

REPORT OF THE COMMISSIONERS, MAINLY ON SECONDARY EDUCATION.

To His Excellency SIR HARRY HOLDSWORTH RAWSON, Admiral in the Royal Navy, Knight Commander of the Most Honourable Order of the Bath, Governor of New South Wales and its Dependencies, in the Commonwealth of Australia.

MAY IT PLEASE YOUR EXCELLENCY,—

We, your Commissioners, appointed on the 11th day of April, 1902, to proceed to Europe and America for the purpose of enquiring into existing methods of instruction in connection with primary, secondary, technical, and other branches of Education, and of recommending for adoption whatever improvements might with advantage be introduced into the State of New South Wales, have now the honour, in continuation of their Commission, to submit to your Excellency's acceptance a further report, mainly on Secondary Education. Some observations on the co-ordination of education are also included.

The general scheme of this Report is analogous to that previously transmitted to your Excellency. It purports to give an account of the main developments in Secondary Education as embodied in the more important educational systems of the world. It also offers some suggestions as to the main lines of reform.

Pressing public duties in connection with the Model and Training School, demanding in the Minister's opinion the personal attention of one of your Commissioners (J. W. Turner), have militated against such complete treatment of the subject as it would otherwise have received.

Summarised

Summarised Report, mainly on Secondary Education.

I.

GENERAL.

[G. H. KNIBBS AND J. W. TURNER.]

1. *Object of Report.*—The object of the present report is :—

(*a*) To give some account of secondary education (excluding industrial and technical) in different parts of the civilised world ;
(*b*) To explain its importance in an educational system ; and
(*c*) To compare the most efficient forms of secondary education with that existing in this State.

The Report gives a brief sketch of secondary systems in the United Kingdom, in America, in Austria, Belgium, Denmark, Finland, France, the different parts of Germany, Greece, Holland, Hungary, Italy, Norway, Russia, Sweden, Switzerland, as well as in New South Wales.

2. *Importance of Understanding our Educational Status.*—Apart from all question as to whether it is urgent or not, it is desirable that we should endeavour to understand what may be called our *Educational Status* throughout the whole range of public education.

The desirability for this lies in the fact, now admitted by educationists, even by those who belong to countries without proper educational organisation, that public education is in an unsatisfactory position, unless its different grades are co-ordinated. For this reason the condition of secondary education is a matter of public concern, and has a greater importance than is recognised by superficial critics.

3. *Importance of Secondary Education.*—This importance may be appreciated by recognising that secondary education is essential, not only as a preparation for the highest forms of general or professional education, *but also for the purpose of professionally qualifying the primary teachers who are to educate the greater part of the population.*

It has been pointed out in the Interim Report that the excellence of the primary teacher of Europe or of America, depends to a large extent upon his coming under the influence of secondary schools, in which he gets part of his professional training. The teacher of the secondary school, having a higher grade of qualification than is sought to be possessed by the primary teacher, as such, tends to prevent deterioration.

4. *Position of Secondary Education in a co-ordinated Scheme.*—Some attention has been given in the Report to the question of the co-ordination of education. The general principles of co-ordination were indicated in the Interim Report (Chapter LIV, sections 1–12, pp. 469–474), and are again referred to in Chapter II herein (in particular in sections 9 and 10).

Secondary education will be properly appreciated only when regarded as an integral part of a complete educational system, which every developed country should possess.

5. *Function of Primary Education.*—What is generally known as Elementary Education—that is, education up to the age of, say, ten or eleven years—is recognised as quite inadequate in itself for the community generally.[1]

In

[1] There is a case on record, it is understood, of a child 9½ years of age passing the test which secures exemption from the obligation of further attendance. Clever children pass the test at about 11½ years of age, and the average at about 12½ years of age. This reveals how unsatisfactory are our educational traditions.

In order that children should be properly equipped to learn trades, either through apprenticeship or through systematic instruction in trade or in industrial schools, it is desirable generally that they should be kept at school to the end of the obligatory age—fourteen. They are likely then to become more intelligent workers and citizens. The experience of France and Italy may be taken as a reply to those who believe we can afford to remove children at an early age from school.

6. *Function of Secondary Education.*—Secondary education, or, rather, its lower grade, ought not to be confounded with Higher Primary. While it may be possible, ultimately, to make them identical, that cannot be achieved in the near future. Secondary education must, consequently, be regarded as preparation for higher education and also for the higher forms of industrial education and for professional callings, among which must be included that of the Primary teacher.

7. *Failure to recognise interest of State in Secondary Education.*—An examination of the educational systems of various countries in operation, and of the views of prominent educationists in the mother country and in foreign countries, has forced upon the minds of the Commissioners a recognition of the *great public importance of secondary education.*

The Commissioners having heard the view expressed by public men of high standing that "secondary education is unimportant, and can well be left to be dealt with by the secondary schools themselves and by the University of the State," feel it incumbent upon them to give prominence to their demurrer to such a view. It has its origin in a failure to perceive the interdependence of the various forms of education. *It may be added that no educationist of any eminence met by the Commissioners, or known to them by reputation, concurs in such an estimate of the place of secondary education.*

The difference between the thoroughness of secondary education in Europe, for example, and in this State is so great that the Commissioners regard it as their duty to draw pointed attention thereto.

8. *Necessity for detailed information as to Character of Secondary Education.*—With a view of assisting those who recognise the public importance of correct information as to our real educational status, who recognise the danger of a merely academic admission of grave defects, and who perceive further the necessity of silencing the scepticism that so often arises from bias, to form just opinions, the Commissioners have given examples of the programmes of work done in the various secondary schools.

In some instances these have been developed in detail. For similar reasons the details of the qualifications required of secondary teachers in the various subjects of the curricula are also given.

9. *Extended Report necessary.*—The length at which the whole question of secondary education has been discussed will appear considerable to those who do not recognise its magnitude, its necessity, and the part which its efficiency must play in our national effort.

As against the superficial view it may be said that the *incisive criticism* of British Secondary Education, which in principle is much the same as our own, by British critics, compelled the Commissioners to devote special attention to the subject.

It ought to be remembered in this connection that the educational experience of America and of Europe is exceptionally valuable. In many countries education has been properly co-ordinated and thoroughly organised, and each step has been taken, not only in the light of very considerable experience, but also after an examination, to the educational thoroughness of which we cannot lay the slightest claim in the development of our public education.

10. *Secondary Education has not received adequate attention.*—The Commissioners are satisfied that not only has the whole question *not* received the public attention it deserves, but also that the popular view as to its importance would completely change, if its relation to our general efficiency in industrial and commercial activity and enterprise, were adequately understood.

11. *The Summaries of each Commissioner.*—As in the Interim Report, it has been thought desirable that each Commissioner should express his individual views in the freest possible manner. For this reason each has given them in a general summary, while the more extended expression of opinion, and detailed information, will be found in the chapters hereinafter, I to XXXIII.

In developing details, the Commissioners have endeavoured to make all information, as far as possible supplementary. This was the more necessary as one of the Commissioners, J. W. Turner, was daily occupied with the care of the Training College for Teachers and the Model School.

12. *Limitation of Work.*—As referred to, one of the Commissioners, J. W. Turner, has been occupied with public duties which militated against as full a study of the various secondary systems, as would have been desirable.

II.

PRELIMINARY OBSERVATIONS.

[G. H. KNIBBS.]

1. *Prefatory Remarks.*—To thoroughly understand the secondary education of any country it must be seen in its proper perspective in the entire educational system. It will be necessary, therefore, to make some reference to the general results of a review of our primary system, and to consider how secondary education stands in regard to the whole body of public education.

To adequately grasp the significance of the subject, it must be remembered throughout its discussion, that with us, as with England, education has no organic unity. For this reason it is necessary to keep in mind the essential difference between public education organised as a system, and public education the various elements of which are without co-ordination. So much by way of preface.

2. *General Result of Interim Report.*—In the Interim Report the Commissioners, while broadly indicating the bearing of the whole question, had, advisedly, to restrict the subject-matter to the more elementary stages thereof, viz., up to that ending with the obligatory period of school attendance. In doing this it was desirable to keep in view, mainly, the necessities of primary instruction. A reference was made to secondary education and to educational policy in general. The purpose of this was to reveal something of the meaning of a satisfactory primary system for forms of education which follow afterwards.

The evidence as to the state of primary education disclosed the fact that *the educational opportunities of the children of the State could not be compared with those of children similarly situated in most countries of Europe or in many States of America*, and that our educational method was seriously defective.

Commencing from the lowest stage, the more conspicuous defects were stated to be the following:—

(1) The general absence of Kindergartens in charge of teachers of higher professional training. [The efficiency of the Kindergartens in the departmental schools is hindered in several ways, to which it is unnecessary here to refer.]

(2) Inadequacy in the system of professional training of primary school teachers.

(3) Unsatisfactory character of the curriculum.

(4) Indifferent pædagogical equipment of schools.

(5) A wrong system of building schools, consequent on a régime involved by the extensive employment of untrained teachers.

(6) Defects in school-hygiene.

3. *Aim-point of Educational Systems must be defined.*—Keeping in view the fact that *a well-defined objective is absolutely necessary as a controlling factor in the development of the educational policy of the State*, it should be pointed out that the outlook on the whole question must rise superior to the mere question of *present* practicability. *To determine the remote aim-point so that educational drift shall be in the proper direction is of prime importance.* The excellence of higher education in Europe, and the vigour and value of its reaction upon elementary education, are largely dependent upon the high character of the secondary system, for it has a far-reaching effect upon all other forms of education.

4. *Undirected Educational Drift.*—Without anticipating too abruptly the conclusions of this Report, it may be said that *our present undirected educational drift is hopelessly inconsistent with the attainment of a high degree of excellence*, such, for example, as that which characterises the schools of countries that are methodical. We are allowing vested interests in education to arise without a well-determined educational system to which they should conform. We are allowing, also, conditions to develope unhampered, which are the despair of educational reformers in the United Kingdom, and which are preventing the mother country from making her secondary and higher education comparable to that of continental Europe. [*See* Chaps. VI to XXIX.]

5. *Difficulty of creating a good Educational System.*—So far, we have not yet sufficiently recognised that—to use the words of Professor Dr. Luigi Credaro, an Italian educationist and parliamentarian: "It is an easier matter to mobilise an army, build a man-of-war, to open up commerce and industry, to construct a railway, than it is to found a good educational system." (*See* Chap. XXV, sec. 1.)

Excellence in such a system can be achieved only by a long-sighted and *undeviating* policy—a policy which will never be disturbed excepting after *exhaustive* criticism by educational experts.

Neither have we, so far, created a satisfactory or definite educational ideal, though that is a duty we should discharge without delay, for without it we cannot progress satisfactorily. That *a controlling ideal is absolutely necessary* will be recognised by any educationist who will give the matter his serious attention.

6. *Effect of ill-considered Change.*—In Italy it has been complained that its educational policy could never attain to a satisfactory condition, seeing that it is continually subject to change through "political cataclysms, which are the ruin of school systems." Each Minister, it is alleged, without having any special qualification as an educationist, has not hesitated to impress upon the scheme his particular ideas, with the result that *the Italian system is said to be the victim of regulation after regulation "embodying neither organic development nor important educational principle."* [Chap. XXV, sec. 1.] We are not entirely defended against a similar danger in this State.

7. *Influence of Popular Tradition.*—Popular tradition in an autonomous democracy as to what may be regarded as constituting reasonable educational provisions is also a limitation. The law of obligation of attendance also affords but a humble standard. In New South Wales this obligation lasts to the age of 14 years, unless exemption is secured by passing an examination. In the opinion of the Commissioner the required standard is too low, and calculated to hinder progress. This defect in our conception as to what should constitute a normal requirement is accentuated by the fact that education is in the hands of teachers, most of whom have not been through the training college, and by the fact that the professional training in the college is not equal to that in the colleges of Europe.

The idea has been expressed that it is sufficient to pass the standard referred to,[1] and then proceed to industrial education—education in the various trades and occupations.

It is incumbent on the Commissioner to point out that such a view is wholly unsupported by the authority of any educationists except perhaps those of Russia, and by these only in a very modified way. In Russian schools—which will be discussed

[1] The average age at which this standard is passed is about 12½ years.

discussed in a later report—the principle of combining general and industrial education is occasionally followed, and apparently with fairly good results. It has to be remembered in this connection, however, that the lower class Russian is not called upon to exercise such important political functions as the inhabitant of New South Wales, otherwise his education ought to include elements now omitted. American and European opinion is that the time spent on primary education is well spent, and that it is more than repaid by increased efficiency in every walk of life.

8. *Merit of Educational System, how determined.*—One of the best ways of evaluating the merits or defects of our educational system is for each individual to ask himself whether under it, or under the system of any other country, he would have been better educated or not. If the answer is in the affirmative, it is obviously an adverse criticism of our system. There can be no doubt about the application of this to the question of secondary education.

From what has been said it is clear that we need to create a distinct idea as to what constitutes a good educational régime. Whether the régime be such that it can be immediately realised or not, it ought *not* be shelved as impracticable. ***Unless we deliberately elect to accept educational inferiority as our permanent characteristic—and such inferiority must inevitably carry serious national consequences with it—we cannot admit that the realised educational excellence of another nation is a thing impracticable for us.***

9. *Reform and its Initiation.*—Our first task is to justly appreciate other systems. Then, creating an ideal as an objective, our next task is to strenuously labour to change the existing system so as to bring it gradually into conformity therewith. More especially is the need to do so *urgent* when the elements of the ideal system are not pitched higher than what has been actually realised in other countries.

To adequately appreciate the significance of such observations as these, let the elements even of our primary system be viewed in their totality and compared with the best that may be seen in other countries. What must be the verdict? Even if the proposals of the Educational Conference of April this year, and of the Committee that sat in May, be given full effect, the educational advantages of the Australian youth will still be *distinctly inferior* to those of the youth in most countries of Europe. It is in some such way that a true idea of the *urgency of thorough educational reform* will perhaps appear.

10. *Our Secondary Education needs reform; why?* What has been said as to the defects of the primary system of the State applies perhaps with still greater force to secondary, and also to higher education. This becomes evident in contrasting our preparatory schools for secondary education, and our schools for secondary education proper, with the secondary schools of Europe.

The character of the work done in the primary school proper, constitutes the opportunity or limitation of systematic industrial teaching, and the lower branches of technical instruction. In the same way the quality of the work in the secondary school limits the ordinary work of the University, and that of the higher branches of technical instruction.

It is by remembering this that we are able to recognise how far-reaching are the defects of our system. Not only must its various stages or elements be seen, as a whole, and in just perspective, they must also be placed in their proper position in the picture of our entire educational system, in order to perceive their true meaning and value.

The matter may be put in another way. In some countries, France and Germany, for example, the whole educational machinery has organic unity. It is thoroughly systematised or co-ordinated. Educational quackery is reduced under it to a minimum. Its various parts are definitely interrelated.

11. *Subsequent advantages of thoroughly organised education.*—Let us consider for a moment the effect of this. The pupil of the French Lycée, or of the German Realgymnasium or Oberrealschule, is well grounded in languages, and in the elements of Science, and the pupil of the Classical Gymnasium in the classical languages.

languages. From the moment a student enters the University, therefore, he is able to work on a totally different plane from what is possible in the English system, or in that of this State, which is sensibly identical therewith. The continental student has a wider horizon. [See Chap. XVI, section 4. Interim Report.] Because of this, activity in the highest plane of work is thwarted and crippled in our institutions. *The University is really reduced, so far as a large part of its work is concerned, to a sort of higher grade secondary school.*

12. *Inferiority of Secondary Education shewn by curricula.*—That with us the secondary school is really educationally inferior will strikingly appear on comparing its work with that indicated in the programmes of the French Lycées—which have been translated *in extenso*, in order to afford a definite comparison [see Chap. XVII], or the German or other continental Gymnasia. It will equally appear, on comparing the scheme of qualification, say, of the German secondary teacher with the secondary teacher of our country. [See Chap. XXII.]

It is impossible to witness the work being done in Continental Secondary Schools and Universities, to read their school-programmes, to review the output of original research in antiquities, languages, or science, or to compare the *rate* of progress, or to read even the lecture notices in a German University, without recognising the inequality of attainment on our part.

In the opinions of many Englishmen, sufficiently in touch with European countries and languages to really *feel* and understand the activity and trend of those countries, *nothing short of radical and far-reaching reform is adequate.*[1] This does not involve blind copying, but it may and does involve something much more fundamental than a few superficial changes and patchwork reform.

13. *Absence of Organic Unity.*—That there is, as stated, really no organic unity in our educational system must be obvious to the most superficial of observers. The whole field is a go-as-you-please one ; in fact, that is its *characteristic.* This characteristic has even been commended as a merit by those who are unfamiliar with European attainments.

It is equally obvious that lack of organisation must, and actually does, operate against thoroughness and efficiency.

No doubt there is a large amount of affectation and pretence in all education; and in all parts of the world there is a great deal of what may appropriately be called educational quackery. These undesirable features, it ought to be remembered, have singularly favourable opportunities of developing under *unorganised* systems, for organisation is itself a considerable defence against them.

Inasmuch as *a certain class of critics of the question of public education, have, on reviewing the thoroughly co-ordinated systems of Europe, attempted to dismiss the whole matter by declaring the better system to be quite unpracticable,* and, as stated, have even defended English want of organisation as a merit, it is necessary to look into the whole matter somewhat closely.

Such critics as have been referred to, have even gone so far as to assert that educational vigour is *promoted* by allowing every educational institution to do exactly as it pleases. Such an attitude is largely responsible for the present educational state of England with its unhappy effects upon her ability to cope with the industrial and commercial competition of her rivals.

It is impossible to examine the provision made by Europe for general secondary instruction, and for industrial and commercial instruction on a scientific and systematic basis, without recognising that English methods and our methods in New South Wales also, can never hope to compete, as they stand at present. Still less can we in Australia hope to be in a favourable position without a radical improvement of our educational scheme.

14. *Increasing Difficulty of Reform.*—If these premises are correct, then *what is needed is a definite scheme of educational reform and development ;* a scheme which will ultimately bring all educational institutions in the State into line, so as to secure their harmonious working toward a common end—the thorough education of our people. And we shall act most unwisely if we allow ourselves to be fettered by injurious traditions. So

[1] See, for example, "Education and Empire," by R. B. Haldane, K.C., LL.D., M.P.

So far, though we are not *absolutely* free from many difficulties that made the Commissioners on secondary education in England regard all approach toward an ideal reform as wholly impracticable, we are *comparatively* free. *Vested interests* are more considerable in the United Kingdom and they *are rarely sacrificed for the common good.* Their magnitude secures them influence, and under our political system the case becomes absolutely hopeless. We can hardly expect our history to repeat a self-abnegation comparable to that of the Japanese Daimiô, or that individualism in a new country will sacrifice itself; and consequently *it is very important that we should avoid such a development as has placed England in a difficult position in regard to systematising her educational effort.*

15. *Reform Practicable as yet.*—As regards reform, *impracticability does not really exist for us yet.* What is needed is a definite scheme and the steady reduction of the existing state of things to compatibility therewith by slow, well considered, and non-irritating processes.

The State's right to interfere in Education, in the interest of the whole people, will hardly be challenged, seeing that the matter is of fundamental importance; and by the formulation of a well-defined policy the adverse drift that has already gone too far can be checked. All this can be done without hardship.

16. *Urgency of Reform.*—Let it be clearly recognised that nationally we dare not accept the situation as it stands, that *no units in the British Empire can afford to be inferior to Europe and Japan in the matter of education,* and we shall face the difficult problem of educational reform with more earnestness. Not to do so would be national insanity.

If it appear that the view above stated is over-strenuous, it may be said that no sane man can regard the national consequences of educational inferiority with unconcern. *A perusal of the chapters on education throughout Europe will convince any unbiassed reader that the lee-way to be made good is considerable.* This will be easily understood when it is recollected that Germany had thoroughly organised both its primary and higher education long before there was any attempt at organisation in the mother-country, and that Charles Dickens' revelations, which did so much to destroy educational quackery, were based upon fact.

17. *View of the Mosely Commission.*—The following passage from the report of the *Mosely Commission* will serve the purpose of shewing that educational reform is regarded as of national importance by responsible educationists, and that the lack of proper co-ordination in English education and the serious consequences that flow therefrom are well recognised.

"The members are deeply impressed by the evidence they have gathered in the United States of the absolute belief in the value of education, both to the community at large and to agriculture, commerce, manufactures, and the service of the State. Although in the past the belief in education has been the effect rather than the cause of American prosperity, *during the last quarter of a century education has had a powerful and far-reaching influence, and it cannot be doubted that in the future it will become more and more the cause of industrial and commercial progress and of national well-being.* They are satisfied that in years to come, in competing with American commerce, we shall be called upon to face trained men gifted with both enterprise and knowledge. They desire to impress on the British public the absolute need of immediate preparation on our part to meet such competition. They have also been impressed with the spirit which animates both teachers and pupils, and by the manner in which the two classes co-operate in the schools and colleges. *Willingness, if not an overwhelming desire to learn, seems to characterise the scholars, and teachers seem to be possessed of but one wish—that of helping their pupils in every possible way. The absence of class prejudice, and of any 'religious difficulty,' serves most materially to facilitate the work of the schools. The closest connection is being established between theory and practice, the practical bent of the men of letters and science, and the breadth of their outlook, being very remarkable.* The services of experts in various branches of knowledge are therefore held in high esteem, and are in constant demand. The important part which manual training is beginning to assume in the schools struck them very forcibly. Such work appears to be, in many ways, of high value as an educational discipline, especially in developing handiness

handiness and alertness, and in familiarising the scholars with constructive processes. They have been much impressed with the liberality displayed, not only by the public, but also by private donors, on behalf of education, as evidenced by the wealth of provision in the form of buildings and equipment which is everywhere made. On the other hand, they observe that the remuneration of teachers is by no means always placed on a satisfactory basis, and they have been led to view, somewhat with alarm, the growing preponderance of women teachers. *Lastly, they would draw attention to the extent to which the work of education is organised, and its various grades co-ordinated, whereby harmonious working is secured, and over-lapping avoided. The need of effecting such organisation in this country, which was before apparent, now seems to them imperative, in view of the experience they have gained in the United States.*"[1]

18. *Secondary Education essential for Primary Teachers.*—It has been clearly shewn in the Interim Report that to demand that *all* primary teachers should attend the University would be *undesirable*; in fact, it would defeat the end in view, viz., the improvement of the educational status of the whole body of primary teachers. If primary teaching is to be improved, *every primary teacher must have a secondary education*, in which he will take certain special subjects [*e.g.*, history and theory of education, etc.], and will be exercised in certain features of professional training [*e.g.*, observation of and practice in giving lessons, in school organisation, etc.]. *The State, therefore, is called upon to decide either to create a number of secondary schools*[2] *which will undertake the education of its primary teaching staff, or to deliberately neglect their professional education.* There is no *tertium quid.*

Quite apart from any consideration of the general needs of the State, which demand that secondary education should be available for its citizens at least in each large centre of population, *the need just referred to must be recognised as imperative.* It would be well if the superficial critics, who are unable to perceive any serious necessity for the establishment of well-equipped secondary schools, would consider what is involved in securing an efficient primary system. [*See* Chaps. XXVIII to XL of the Interim Report, pp. 268–370.] It has been shewn in the Interim Report that higher type of professional education is absolutely necessary, in order to create a qualified primary teaching staff.

The inquiry of the Commissioners has satisfied them that the characteristic feature of modern educational reform is a recognition that the life-activities and general well-being of the community depend very largely upon the efficiency of the primary teacher, and that what may be called the three-R view of education is extinct, at least among all educationists worthy of the name, and in the practice of America and Europe. Excepting by critics in our own State, it is also recognised that expenditure in making primary teaching efficient is more than repaid by the national wealth created as a consequence.

19. *New conception of Secondary Education.*—Secondary education does not now carry an implication of reference to schools whose greatest effort is spent upon learning Latin and Greek—a matter to which fuller reference will later be made. The characteristic of the great reforms in secondary education, which have taken place throughout almost the whole world, is a wider conception of what constitutes culture, freer options for students (especially as between ancient and modern languages), and a vivid recognition of the fact that education which takes no account of the natural sciences, of the exigencies of modern life, and of the modern conditions of the world's activity is essentially lop-sided. Even in the study of the languages, the "narrow formalism which did duty in English Universities thirty years ago" (to use the phrase of Dr. Haldane) has received its death-blow, and with it probably a good deal of pedantry also. The spirit of the criticism of Dr.

[1] Reports of the Mosely Educational Commission to the United States of America. London, Co-operative Printing Society, Ltd., 1903, pp. 400.

[2] The course for primary teachers would be a modified course in the secondary school.

Dr. E. A. Sonnenschein, Professor of Greek and Latin at Birmingham University, has had its effect in the newer movement in the United Kingdom. His indictment is expressed in the following phrase :—

> "Classics is converted into little more than a long training in the use of the grammatical microscope. There could hardly be a greater offence against the masterpieces of ancient literature. It is no wonder that the ascent of Parnassus is found to be a difficult one, when no attempt is made to lead the climber along a possible path."

This matter, however, is of such magnitude as to demand a more complete statement, and it will again be referred to.

20. *Proper Attitude for the Study of the Question of Secondary Education.*—To a limited extent the higher forms of education of all countries lend themselves to the accentuation of social differences—a feature most intensely marked in the English "Public School." Educational reform in countries, where it has been most conspicuous, tends rather in the direction of segregating the talented portion of the population, without reference to their origin ; and it endeavours to afford not only a cultivation of the intellect and will, but also to stimulate courtesy of manner and distinguished address. The ideal aim of secondary and higher education in a State such as this will, of course, tend rather toward the establishment of an aristocracy of intellect and character, than to the maintenance of an exclusive caste founded upon birth or wealth. This latter, viz., the supplanting of an hereditary or plutocratic by an individual aristocracy, is clearly expressing itself throughout the educational movement of the entire world, and no less in the United Kingdom than elsewhere. The details of much of secondary education in England, apart from any question of its pædagogical status, are of little value to us from this point of view.[1]

Contingent upon the admission of the position above defined, it is clear that we have no concern in the development of secondary education other than to secure (*a*) the highest degree of efficiency therein ; (*b*) a constitution such as will tend to segregate the more talented units in our population ; and (*c*) an organisation such as will secure for them that training which will make them capable in all higher effort, and in direction of our various activities, industrial, commercial, social, and political.

It may be noted that the freest organisation of education, consistent with a high degree of efficiency, is found in countries distinguished in each branch of education, classical or otherwise. It may also be noticed that the spirit of modern education accords with freer options in regard to individual studies, providing only that they cover a sufficiently wide ground to assure general culture.

Another feature worthy of note is the postponement of any specialisation till as late an age as possible ; for example, in the German Secondary system the decision is not made before the age of 12 ; any change of intention afterward involves loss of time, but is, of course, not impossible. The student of education will do well to remember that *thoroughness is inconsistent with absolute freedom, the curricula must be definitely organised.*

These preliminary observations if attended to, will help to focus the attention upon the issues of importance.

21. *Superficial Study of Education worthless.*—In concluding this preliminary statement it may be said that, in the opinion of the Commissioner, *a desultory examination and a superficial report are worthless.* An able critic, professing a deep interest in education, and holding a high public position, has expressed the view that the Commissioners' elaborate report on primary education was quite unnecessary, admitting at the same time that he had not read it.

The Commissioner here writing desires to point out that, lengthy as was this Report, it was by no means exhaustive, and the questions considered were discussed in the light of and after a careful review of educational progress over the major part of

[1] In the development of our Secondary System in this State, we need not be solicitous to reproduce the condition of things which expresses itself in the "fag" system of some of the British Public Schools, or in the practice of "ragging" in the British Army. We shall do well also to avoid the creation in our schools of a state of things, which lends itself in public appointments either to nepotism or to preferences for school-fellows of a socially exclusive school, apart from all question of qualification. A very little reflection will satisfy any unprejudiced inquirer that there is considerable national danger in placing any but qualified persons in positions of power.

of the civilised world. The only serious omission was a visit to Japan, for which the Commissioners are not responsible. Its exclusion from the field of inquiry has been partially made good by the subsequent study of its school system.

Obiter dicta on educational matters are of little value, and an exhaustive discussion of primary education from the standpoint of those who aim at thoroughness and efficiency is a desideratum, and without it our educational system is not likely to undergo that radical transformation without which it will remain in its present very unsatisfactory position. *A thorough study of primary education was also an essential preliminary to an examination of secondary education.*

The glaring defects of our Educational System are sufficient evidence that it has not received the attention which so important a matter demands, and it is because of this that we have grown up with indifferent traditions—traditions which are as injurious as they are difficult to eradicate.

The same remark applies quite as cogently to secondary education. We are at present on a wrong track, and a reading of the somewhat lengthy report hereinafter given will convince the patient critic of the fact. *A desultory examination of a subject so profoundly affecting our national future does not do justice to its importance.*

III.

GENERAL SCHEME OF THE REPORT.

[G. H. KNIBBS]

1. *Relation to Interim Report.*—In order that the connection between primary, secondary, industrial, technical, and higher forms of education should not be overlooked in a study of secondary education, the Report opens with "Introductory Observations" of a general character.

A brief indication is given as to what has been established in the Interim Report [Chap. I, secs. 1, 2,], and the degree of interdependence and connection existing between a primary and secondary system is outlined [Chap. I, sec 3]. It is pointed out also that the principles of *rational* (as distinguished from *empirical*) study have been followed in this, as they had been in the preceding, Report. The difference between the two was indicated in that Report [See Chap. III, secs. 1–22 pp. 7–14 therein].

2. *The Eclectic Method followed.*—It is shewn that we should not be tempted to blindly follow some system as a model, nor should we, on the other hand, strain excessively after originality; that the world-wide interest in education of the chiefs of the education departments of other countries, their extensive reading, their linguistic attainments, and the extent of their general culture, have given a high value to their opinions; and further, that *the more familiar one is with European educational literature, and with the higher planes of American educational investigation, the less inclined is one to attach weight to the crudely formed opinions of limited experience.* What we need is a self-reliance which results, not from the overweening confidence of irresponsible and ill-considered opinion, and from insular prejudice, but from the mature and earnest consideration and criticism of the magnificent developments of educational systems, to an excellence comparable with which we can lay not the slightest claim [Chap. I, sec. 4].

It is the inferiority of our whole educational system which has made the task of the Commissioners a difficult one.

3. *Study of Secondary Education must take Account of Co-ordination.*—In order that the interdependence of educational issues may be clearly perceived, Chapter II hereinafter is devoted to general observations, not only on secondary, but also on technical and higher education.

In asking "what educational scheme is calculated to make our people the intellectual, moral, industrial, commercial, and professional equals" of other nations, it becomes obvious that we must take account of the whole question of education.

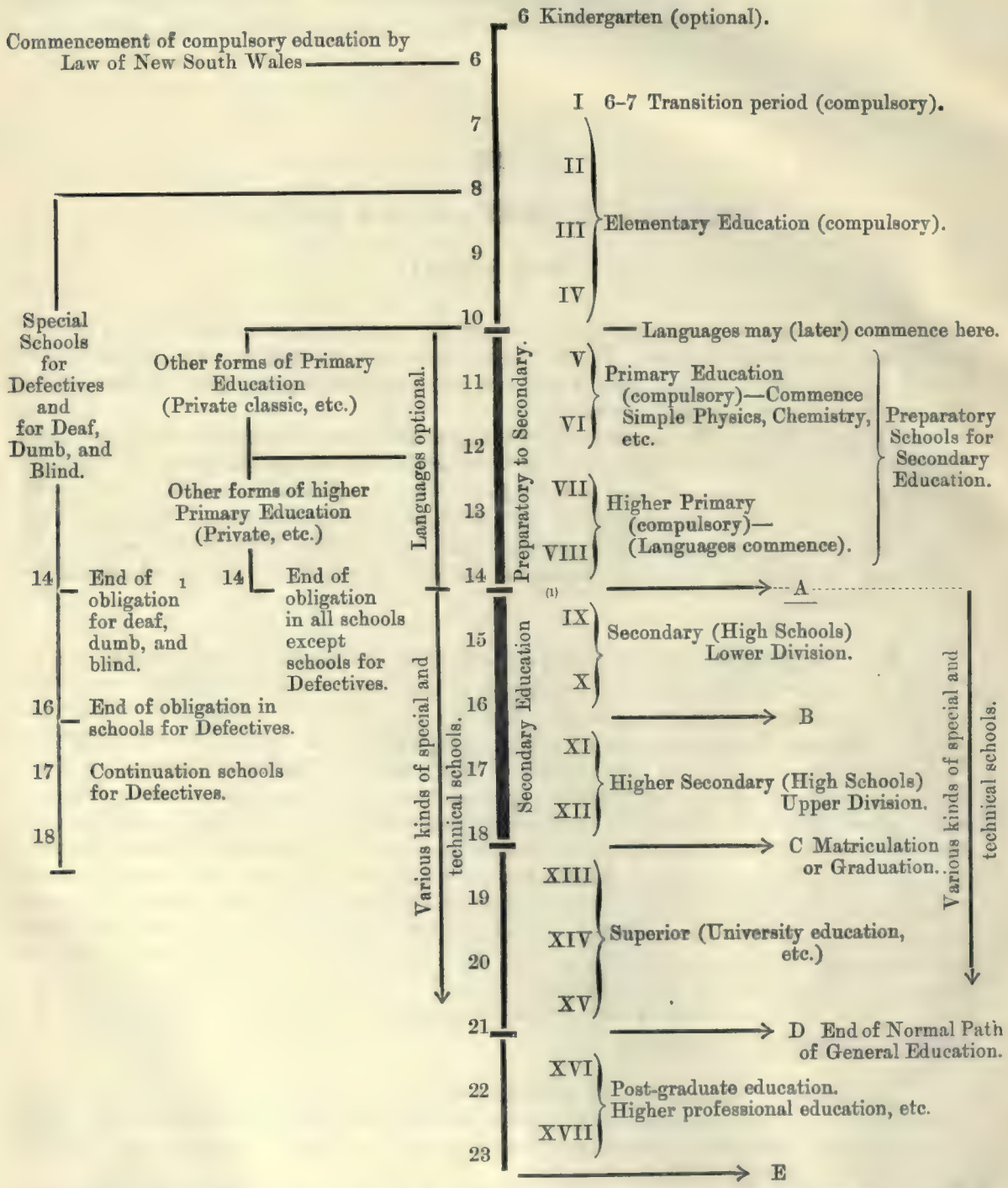
The

The relationship of primary education to the subsequent vocations in life, the mutual relations of ordinary apprenticeship and systematic industrial education, must all be considered; and, through all, *thoroughness is a desideratum.* The points of departure for different courses are indicated in Chap. II.

Our educational system is so slip-shod and unsatisfactory, that persons whose educational traditions are practically limited thereto, will perhaps initially find it difficult to realise how much depends on the thorough co-ordination which is stated to be an essential of a good system. [See Chap. II, secs. 9, 10.] The more closely however the matter is studied, the more deep will the conviction grow that systematic organisation is necessary.

4. *Illustration of Co-ordination.*—The points of departure in an organised scheme will be illustrated by the following diagrams :—

OUTLINE OF THE SCHEME OF CO-ORDINATION IN A COMPLETE EDUCATIONAL SYSTEM.

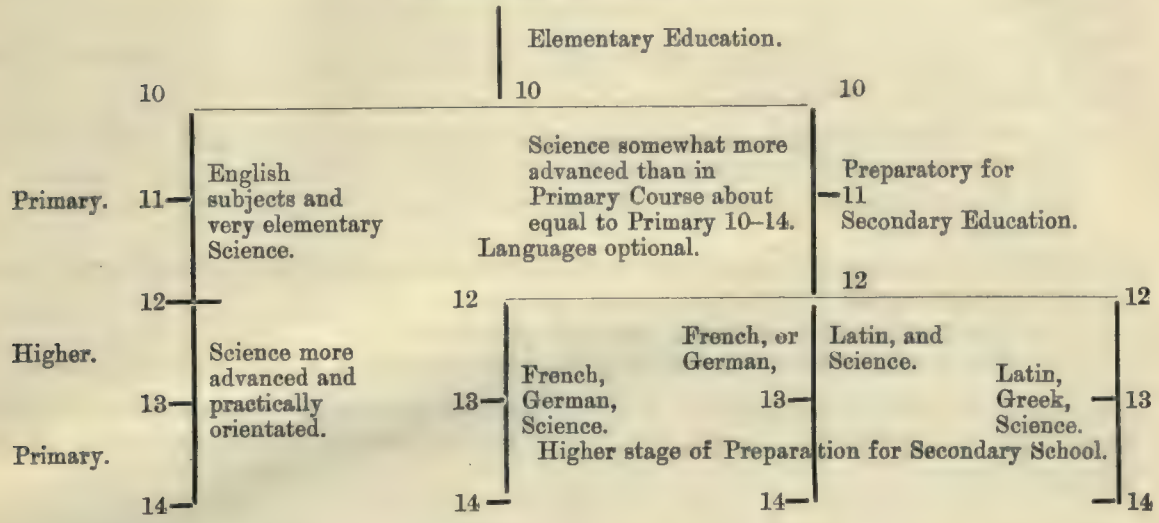


(1) NOTE.—Neither ancient nor modern languages should be compulsory; but pupils not taking them should be considered as not qualified to enter upon secondary education. They would, of course, be qualified to enter upon some of the various forms of special or technical education.

During

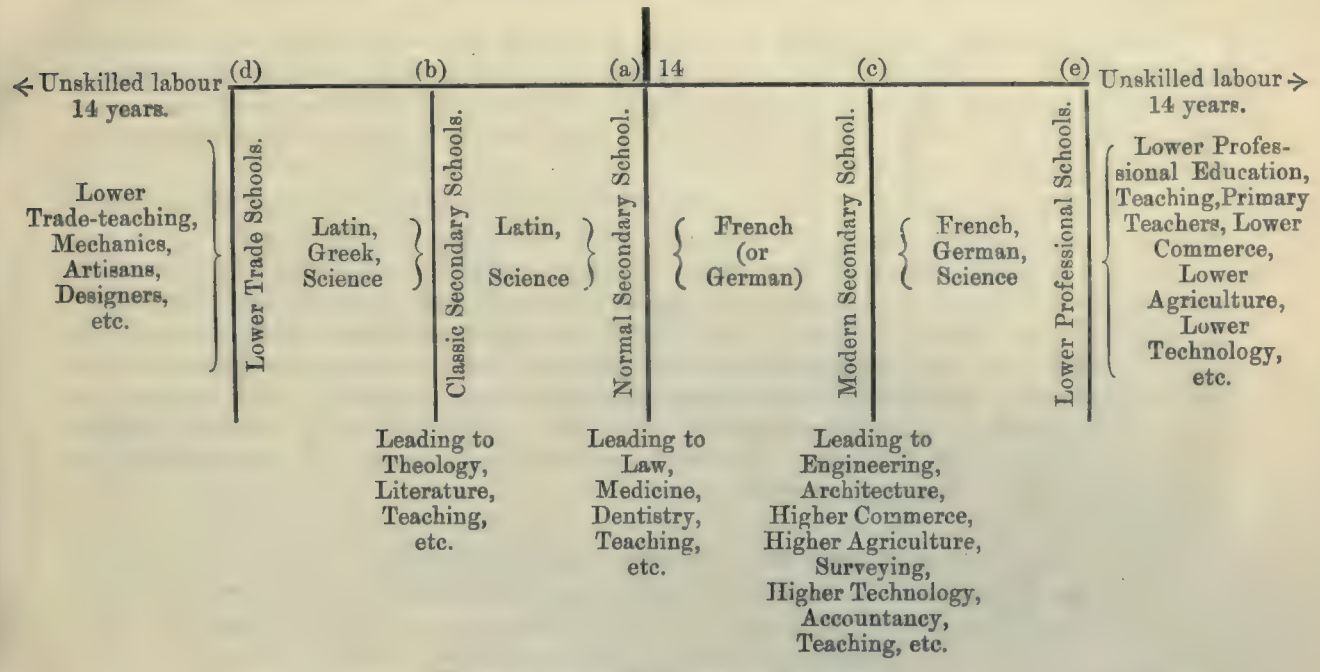
During the period of from 10–14 years of age, as well as that from 14–18, there will be some degree of parallelism between the different forms of education. These are sufficiently illustrated in the following diagrams :—

PARALLELISM BETWEEN PRIMARY EDUCATION AND PREPARATORY STAGE OF SECONDARY EDUCATION.



The above diagram practically reproduces the German Reform System. The French Reform, instead of limiting the languages to one of the following three, viz.,—(*a*) two modern languages beside the mother-tongue; (*b*) a modern language and Latin; or (*c*) Greek and Latin,—allows any two languages beside the mother-tongue.

The diagram hereunder shews the possible paths after the age of 14. The only fundamental difference between German and other systems is that the options are limited to three types of courses in Germany.


← Unskilled labour 14 years.
(d)
(b)
(a)
14
(c)
(e)
Unskilled labour → 14 years.
Lower Trade-teaching, Mechanics, Artisans, Designers, etc.
Lower Trade Schools.
Latin, Greek, Science
Classic Secondary Schools.
Latin, Science
Normal Secondary School.
French (or German)
Modern Secondary School.
French, German, Science
Lower Professional Schools.
Lower Professional Education, Teaching, Primary Teachers, Lower Commerce, Lower Agriculture, Lower Technology, etc.
Leading to Theology, Literature, Teaching, etc.
Leading to Law, Medicine, Dentistry, Teaching, etc.
Leading to Engineering, Architecture, Higher Commerce, Higher Agriculture, Surveying, Higher Technology, Accountancy, Teaching, etc.

The schools on the (d) line may be night schools.

Without some definite scheme of *co-ordination*, such as is illustrated in the preceding diagrams, educational thoroughness is impossible. A complete educational organisation requires also that a definite *guiding programme* for each path should be elaborated so as to maintain the uniformity of the system throughout the territory to which it applies. It is not intended that such programmes should be blindly and mechanically followed; their proper function is to *guide* the work done in the different schools. In an organised system of this character, when a change of intention

intention occurs, it is possible to decide exactly what subjects must be taken, or what extra work must be done, by the pupil in order to pass from any one educational path to another. The matter is more fully dealt with in Chap. II, secs. 9-14.

The above will sufficiently illustrate the point that a real study of any branch of education involves the consideration of its place in the entire scheme of educational organisation.

5. *Subjects demanding consideration.*—Among the subjects referred to in Chap. II, may be mentioned:

(1) The place which Science should occupy in all forms of Secondary Education;
(2) The function of Classical and Scientific Education;
(3) What should constitute the normal path toward the highest forms of education;
(4) The equality of what may be called the academic dignity of different forms of education;
(5) The influence of original research on education;
(6) The importance of stimulating the higher activity of all secondary teachers;

and many other similar matters. In the details of the Report these various subjects were kept in view while studying the systems of various countries visited by the Commissioners.

6. *The Place of Latin and Greek in Secondary Education.*—Under the present régime *it is impossible to enter the University of the State with a view of regularly following its various courses without passing in Latin in the Matriculation Examination.*[1] As this is in conflict with the Reform movement which is taking, or has taken, place almost throughout the entire world, careful attention has been given to the question as to the place which Latin and Greek should occupy in secondary education. [Chap. III, secs. 1-19.] *In the opinion of the Commissioner, the limitation imposed by the State University is not in the interests of higher education,* for reasons which will be set forth at greater length hereinafter. [See Chap. III.]

7. *Secondary Education in New South Wales.*—In order to give some conception of the character of secondary schools in New South Wales, two chapters have been written thereon [Chaps. V and VI], the latter dealing with the State High Schools of New South Wales, and the former with the curricula of some of the private secondary schools.[2]

It will be obvious to any student of the curricula of these schools that each works on independent lines, and evidently there is no idea of uniformity.

No definite principle has been followed in making any selection among the schools, but those whose curricula are quoted are well-known, and have a reputation as high as any in the State. It ought to be mentioned that other schools may equally well have been included, but the inclusion would have been without distinct advantage other than that of confirming the preceding statement. The main object of the reference to Secondary Education of New South Wales is to afford distinct evidence that, as in England, so with us, secondary education is unorganised and practically follows English traditions.

8. *Other Educational Systems.*—Secondary education in Great Britain, in America, in Austria and Hungary, in Belgium, Denmark, France, Germany, Greece, Holland, Italy, Russia, Switzerland, Finland, Norway and Sweden, have been dealt with in a series of chapters, and references will be made to them in detail hereinafter.

9. *Detail of Curricula.*—The experience gained by the Commissioners during the discussion through the Press, and at Educational Conferences held since their return to the State, has shewn the necessity of supplying something more than summaries indicating their judgment as to the great difference in the character of American and European education and that obtaining in this State. For this reason the

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[1] It is possible, it is true, to attend the lectures and courses of the University, but not to *graduate.*

[2] By mutual agreement, it was decided that one of the Commissioners [J. W. Turner] should give an account of the tate High Schools, and the other [G. H. Knibbs] of the Private Secondary Schools.

the Commissioners, in this Report, have translated programmes at considerable length, and have given more detailed information in regard thereto. A reading of these, and a comparison with the standard of education of boys of the same age in this State, *will afford the clearest possible evidence of the need for educational reform*, unless, of course, we decide to rest satisfied with educational inferiority.

10. *Professional Education of Teachers.*—Several chapters are wholly or partly devoted to explaining the scheme of professionally training secondary teachers in Europe, in two instances the subject being treated in considerable detail, viz., in the case of France and Germany. [See Chaps. XV, XXI, and XXII.] A reference to these will satisfy the reader as to the true explanation of excellence in European education. The subject will be more fully referred to later on in this Summary.

11. *Scientific Equipment in Secondary Schools.* — Chap. XXIX contains an account of the scientific equipment in secondary schools. A reference to this was necessary in order to make it clear that the systematic teaching of science is really possible in a European School, and to give some idea of the lavish expenditure in the way of general pædagogical equipment. This consists of very fine libraries, of chemical and physical apparatus, of museums for the teaching of Botany and Zoology, and the necessary accessories for scientific study generally. Besides these, there is the ordinary equipment in the way of maps, charts, pictures, and casts, illustrating art, ethnology, and science, various types of mural diagrams, etc., etc.

In order to give an adequate idea, illustrations have been taken at random from the reports of various schools. Attention is drawn to the magnificent libraries that are to be found in some of the European secondary schools: in all they are incomparably better than with us.

12. *Defects of our Educational System.*—The defects of our system are discussed in Chap. XXX, more especially in regard to secondary education. Briefly it may be stated that want of organisation, defective curricula, insufficiency of the means for teaching Science, inadequate equipment, and the absence of any definitely regulated scheme for the professional qualification of teachers, constitute the principal defects in secondary education in New South Wales. Conversations with some of the leading educationists in our Secondary Schools have satisfied the Commissioner that they will welcome any steps which might be taken for the radical improvement of secondary education, the limitations of which they realise as keenly as anyone, and are anxious to overcome.

13. *Relation of the University to Secondary Education.*—Since one of the important functions of secondary education is that of preparing students for the highest forms of education, it was desirable to discuss the function of the University in an educational system in connection with secondary education, and to foreshadow how, with a good secondary system, the work of the University would be raised to a higher, in fact, to its normal, plane. Not only would this give a healthy stimulus to the labours of the professorial staff, the University work would be far more interesting and of greater value to the student and to the community. A University, when students enter it thoroughly prepared, is able to render a much higher service to the community than under the existing régime, and the defects of English secondary education are one of the most serious limitations of English Universities.

14. *The Path of Reform.*—The Report closes with a discussion as to the need and urgency of reform, and offers suggestions as to how it is to be realised. The peril of allowing the present unorganised state of education to continue is pointed out. Attention is drawn to the fact that vested interests are growing up, and a situation *is being allowed to develope which is the despair of educationists in the United Kingdom.* That condition of things which has done so much to hamper the mother country in her industrial and commercial competition, and which has reacted also so unfavourably upon thoroughness in English education, is rapidly being reproduced here.

Lengthy as is this Report, it falls short of the original intention of the Commissioners, partly because one of the Commissioners [J. W. Turner] was engaged in public duty in the routine work of the Department of Public Instruction, and partly because it is desired that the issue of the Report should not be further delayed.

The difficulty of establishing a sound educational system is one which demands even a more mature study than has been possible to the Commissioners, though this view of the matter is inconsistent, perhaps, with popular tradition.

IV.

OUTLINES OF SECONDARY EDUCATION IN VARIOUS COUNTRIES.

[G. H KNIBBS.]

1. *Prefatory Remarks.*—It is not possible to give anything like an adequate conception of the characteristics of the secondary education of different countries in the few lines which will be devoted to each hereunder. All that is practicable is to roughly indicate the most striking features. That this will sufficiently indicate the conspicuous merit of the organised systems of Europe, is too much to hope; if it awaken sufficient interest to bring about a recognition that education in any part of the British Empire should be made comparable to the best, it will have served its purpose. At the same time it ought to be observed that the opinions formed by the reader who is unprepared to follow the subject in detail can have no *real* value. It is only by a detailed study of American and European education, and perhaps particularly the latter, that the whole question can be rightly understood. In following the various curricula, it is essential also to remember that the scientific equipment is such as to make the teaching thorough and realistic, and that the general equipment is equally efficient.

2. *British Secondary Education.*—The details of British secondary education will be found in Chapters VI and VII. Strictly speaking there is no organised secondary education in the United Kingdom, at least in the sense that secondary education is organised in Europe. Consequently it is necessary for the Universities to appraise the work of the secondary schools by a system of examinations, and to decide matriculation by these examinations.

The various types of school may be classified in several ways. Some schools, for example, are intentionally socially exclusive. These are generally boarding-schools, charging fees, such as place them beyond the reach of any but the wealthy. Other schools are of a more democratic character.

At the head of what may be called Endowed Grammar Schools are such great public schools as Eton, Winchester, Harrow, Rugby, etc. [Chap. VI, sec. 6.] In these great stress is laid upon what is called "public school spirit," that is to say on the creation and fostering in the pupils of strong ties of common sympathy and friendship based mainly and sometimes solely on the ground of belonging to the same school. Whatever opinion may be entertained as to the desirability or equity of the preferences shewn throughout life for school-fellows in regard to appointments to all sorts of positions—and it must be admitted that real qualification often counts for very little—the public school spirit undoubtedly tends to diminish the mischief of the purely mercenary spirit, and to create some of the finest traditions as to what is consistent with gentlemanly conduct. It has been observed by foreign critics that the mere fact that a man has been educated in one of the great public schools assures him a preference throughout the British Empire, irrespective, that is, of his technical fitness for a particular position. [*See* Chap. VI, sec. 6.]

A large number of schools are growing up in England, which are somewhat more democratic in character, though, as a whole, English secondary education can hardly be regarded as democratic. Culture in England signifies rather a knowledge

of

of the Classics than an all-round education, and, though there are eminent exceptions, the English secondary school lends itself somewhat to classical culture as a particular type-discriminant, as regards the classes of society.

In many of the great public schools a spontaneous or, in fact, any appreciation of Science meets with but little sympathy. It is "good form" not to take even ancient literature over seriously. Beside open-air sports, enthusiasm in the literary treasures embodied in the Greek and Latin languages is perhaps the "only form which is good form." In a good-humoured way science in general, and chemistry in particular, are dubbed "Stinks," and it is undoubtedly "bad form" to be overmuch engrossed therein. This might be ignored but for its effect, for notwithstanding that the contempt for science is good-natured, it has a real effect in checking, probably to an extent difficult to estimate, an official recognition of the national value of that scientific knowledge which would strengthen England industrially. In this connection it should not be forgotten, that many who have done much for the cause of science have had, like Huxley for example, to fight strenuously to create a change of attitude in regard to the whole field of Natural Science.

The more democratic secondary schools of England are less pronounced in their hostility to Science, and in their exclusive advocacy of Classics, and are more in sympathy with the teaching of Physics, Chemistry and Natural History. In such schools the scientific equipment, though not to be compared with that in the Realgymnasia of Germany, for example, is better than in the pro-classic schools previously referred to.

Plato drew a distinction between those who learn the art of the "grammarian" and of the "musician" for trade (ἐπὶ τέχνῃ) and those who, as free men, learn them for education and culture (ἐπὶ παιδείᾳ). Both types of school, previously referred to, probably equally respect the latter idea, the idea of culture, but in the more popular school a broader conception has arisen, viz., that all knowledge which is so communicated as to evoke, exercise, and discipline faculty, is worthy in the highest sense to be esteemed educational. There can be no doubt that pedantic formalism, which regarded the communication of some knowledge of Greek and Latin literature as pre-eminently the problem of education, is steadily giving place to an appreciation of a larger view as to what constitutes culture. The modern type of school, while in no way relaxing the cultural view of education, takes account of the marvellous extension of our knowledge of Nature, and of the part which that knowledge is playing in the commercial and industrial enterprises of mankind, and of the increased fulness of life which is being realised through modern scientific discovery.

From the utilitarian standpoint a considerable acquaintance with science is admittedly necessary, and this fact, more fully recognised in the modern type of school, is commencing to modify the curricula.

Chapter VI. contains a general indication of the subjects treated in the English system, but inasmuch as education has not been thoroughly organised, no attempt has been made to give a general analysis of the various curricula. They are formulated in response to general traditions, varying considerably as between class and class, and do not express the consensus of eminent educationists, consequent upon an elaborate study of co-ordinated education.

The schools may be classified in another way, viz., (i.) According to Origin and Constitution; (ii.) According to Educational Function. As regards the former the secondary schools of the United Kingdom may be divided as follows:—

(*a*) Public .....
- (1) Endowed Schools.
- (2) Municipal or County Schools.
- (3) Public Elementary Schools of higher grade.

(*b*) Proprietary
- (1) Schools owned and managed by public companies.
- (2) Schools held by private trustees or shareholders.
- (3) Schools owned by religious denominations.

(*c*) Private .....
- (1) Schools managed directly by the proprietor.
- (2) Schools in which the principal has a pecuniary interest.

As

As regards the latter, viz., classification according to educational function, the only division of any importance is into grades, which may be defined as follows:—

(*d*) 1st Grade—Schools whose function is the education of a learned, literary, professional, or cultured class, as, for example, those belonging to the so-called learned professions, those who intend to take holy orders, lawyers, physicians, teachers, littérateurs, those who desire to follow scientific pursuits, to enter public life, the higher civil service (home or foreign), etc. In general, the educational career of these persons would terminate in the universities.

(*e*) 2nd Grade—Schools whose aim is to provide education for those who desire to engage more directly in the higher industrial and commercial life of the community.

(*f*) 3rd Grade—Schools whose office it is to educationally equip for the higher handicrafts, for the ordinary commerce and industry of shops, and town. These are represented by the Higher Grade Elementary Schools.

These various grades may be divided again as follows:—

(*d*) 1st Grade—(1) Boarding Schools; (2) Day Schools.
(*e*) 2nd Grade—(1) Modern; (2) Science; (3) Technical.
(*f*) 3rd Grade—(1) Higher Grade Board Schools; (2) Higher Grade Elementary or Primary Schools.

Fuller information in regard to these matters is given in Chapter VI.

It will be seen from the above that so far as educational function is concerned, education in the United Kingdom has sufficient variety. Owing, however, to the absence of any definite scheme of co-ordination, the system educationally has nothing like the thoroughness of the continental systems. Moreover, owing to the fact that the curricula are not definitely organised, and that the scheme of professional qualification for teachers is also indefinite, it has not been possible to allow the final examination in the school to determine the fitness or otherwise to enter the University. Consequently, those who are being prepared for the University are always subjected to a certain amount of "cramming"; in fact, the whole English system is one which, through want of organisation, lends itself to the evils of the *outside* examination, whereas in better systems the pupil's progress is appraised by those who are familiar with his every-day work.

The organisation and equipment of some of the modern schools in England and of some of the schools of Edinburgh and Glasgow abundantly shew that, were it possible to organise British Education as it is organised in Europe, the most promising results would be obtained.

The question of secondary education in Scotland has been discussed in Chapter VII. [J. W. Turner]. The recognition of the importance of a broad conception of education, and of the necessity of scientific equipment and teacher are features worthy of note. The difficulties in the way of a general organisation of secondary education are less pronounced in Scotland than in England.

3. *Comparison between the Secondary Systems of England, Scotland, Wales and Ireland.*—Notwithstanding that the great public schools of England have always laid stress upon good form and tone rather than upon even *general* culture, and have believed that the function of the school was to develope manly traditions and *esprit* rather than to produce high intellectual attainments, that conception has not governed the whole of the United Kingdom. Scotland, Wales, and Ireland have perhaps leant more strongly to general culture, properly so-called, than has England, and there is perhaps also a more democratic ambition for education in these three countries, though the north of England is also distinguished in this respect.

It may also be mentioned that the traditions as to what should be regarded as constituting general culture, are broadening also in the schools of Ireland, as they are in Scotland, though there is still a want of sympathy in certain quarters, in regard to equipping the secondary schools for the teaching of physics, chemistry, and natural history. Laboratories were being fitted up during the time of the Commissioners' visit.

A widespread ambition to become broadly educated is much to be desired, and has more to commend it to the people of this State than has the general ideal of the English public school (*i.e.* as it now stands). The broad ideal is more in keeping with the spirit of our people and with the general needs of the State.

In reference to British education it may be finally said, that while in individual cases the ideals are often excellent, the want of co-ordination, and absence of the spirit of co-operation, are such that they do not afford that material for the elucidation of a national system of organised education, which might guide our control of public education.

4. *Secondary Education in Austria.*—One of the earliest steps in the organisation of Austrian secondary education was the regulation of schools by the Imperial Patent of 16 November, 1735, bringing them under the State control. On the 22 March, 1760, an important Commission was called into existence under the presidency of the Bishop of Vienna (Cardinal Migazzi), and that of Gerhard van Swieten. In 1775 the Gymnasia were organised by Maria Theresa, the scheme of instruction being that of the Piarists (" clerici regulares scholarum piarum "). The plan adopted was later modified, first in 1805 and then again in 1819, all Gymnasia being constituted as schools of six-classes, *i.e.* schools with a six-year course. In 1848, a Ministry of Public Instruction was constituted, and in 1849 Franz Exner and Hermann Bonitz drew up a scheme for the thorough organisation of the whole of the secondary schools of Austria. This scheme came into full force in 1854, and has practically determined the mechanism of Austrian secondary education up to the present time. In 1863, a Council of Education (Unterrichtsrat), divided into sections, one dealing with the *Gymnasien,* another with the *Realschulen,* etc., was called into existence. Since several minor modifications have taken place, viz., in 1870, 1879 and 1884. At the present time the secondary schools of Austria are the following :—

(1.) Gymnasium (or Classical School).

(2.) Realgymnasium (or Classic and Science School).

(3.) Realschule (or Modern School).

They are all known in Austria as middle schools (Mittelschulen) since they constitute an intermediary stage between the Folkschool and the High School (Hochschule) or University (Universität). These middle schools are of two kinds, viz. :—

(i) Public (öffentlich) ; (ii) Private (privat) ;

the *former having the right to authoritatively confer certificates* (Zeugnisse) recognised by the State. These various schools are known as " State," " Territorial," " Communal," or " Corporation " middle schools. About three-fourths of them are State schools, and many are subsidised, belonging either to the towns or communes or to the ecclesiastical authorities. Occasionally denominational schools are called " Imperial-royal " (*e.g.*, kaiserl. königl. Gymnasium), notwithstanding that in reality they are not strictly State schools, though, of course, they are subject to the discipline of the State system.

The highest authorities in the matter of education are the Imperial-Royal Ministry for Public Worship and Education, and the Imperial-Royal Territorial School Council (Das kaiserl. königl. Ministerium für Kultus und Unterricht und der k. k. Landesschulrat). These form the immediate supervising authorities for the middle schools of single provinces. The Governor (Statthalter) or President of the Territory (Landespräsident) is the Chairman of the Council. In Vienna, Prague, and Lemburg the representative of the Governor is a special higher officer, with the title Vice-President (Vizepräsident d. k. k. Landesschulrats). The Territorial Council exercises a supervision over the whole of the educational machinery, *High schools and Universities, however, being excepted.*

The curricula are given in Chapter IX., section 7, viz., for 1849 and 1884 for the Gymnasium, the latter taking account also of later modifications, and for 1879 for the " Realschool," also taking account of recent changes.

An analytical table, shewing the time devoted to each subject, in a large number of Austrian schools, is given in the section referred to. These include Lower and Upper Austria, Bohemia (Czech and German schools in), Bukowina, Dalmatia, Galicia,

Galicia, Goerz, Istria, Kaernten, Krain, Mähren, Rovereto, Salzburg, Silesia, Steiermark, Trieste (German and Italian schools in), Tyrol (German and Italian Schools in), Vorarlberg, etc. It will be seen that, while there is not absolute identity, there is considerable similarity in the curricula.

The special aims of the Real School are to provide—(i) A general education, with special regard to mathematical and natural science subjects; and (ii) a preparation for the superior schools—*e.g.*, the Polytechnica, the Academies of Forestry and Mining, High School for Agriculture, etc. The Real School is divided into the lower and upper Real School.

The final examination or graduation in the secondary schools confers the following privileges, viz.:—The Maturity Certificate (Maturitätszeugnis) of a Gymnasium admits to University studies, to the Technical High School (after an examination in descriptive geometry and free-hand drawing), to the school of naval architecture (after an examination in descriptive geometry), to the military academy, to the high school for agriculture, to the mining academy, to the Arbiturienten course in the commercial academy of Vienna and Graz, to institutions for the education of teachers, and to entrance into two years' pharmaceutical practice course.

The Maturity Certificate of the Realschulen admits to the Technical High School, the school of naval architecture, the high school of agriculture, the mining academy, the Arbiturienten courses in the commercial academy, and finally to the Universities studies (after passing in some further subjects).

The movement for the participation of women in higher education is developing in Austria, through the influence of a special society (*Verein für erweiterte Frauenbildung*), and considerable advance is being made in a more highly developed course for the professional training of secondary teachers than merely passing through a University.

The fees payable by students are very moderate. [See Chap. IX, sec. 26.]

5. *Secondary Education in Hungary.*—The Hungarians trace their system back to 1000 A.D. The culture of the liberal arts flourished at Veszprém in 1276; the University at "Pécs" was organised in 1367; that at Buda in 1390. In the early form of education the subjects were divided into the *trivium*, grammar, rhetoric and dialectic, and the *quadrivium*, arithmetic, geometry, music and astronomy, the former constituting *general* and the latter *special* culture.

Passing over various phases in the development of the secondary system, which was in many respects similar to the development in France, the first great step in organisation was that of Maria Theresa in 1777. (*Ratio educationis totiusque Rei Literariae per Regnum Hungariae et provincias eidem adnexas.*) The second *Ratio educationis*, viz., that of 1806, divided secondary education into three sections. The first was known as the grammar-course, to enter which it was necessary to attend the primary school for two years. The main object in this was to give the pupils a knowledge of Latin, at that time practically a living language. The second section consisted of two classes called the "Humanities," where the elements of geography, history, and arithmetic were taught, and, above all, rhetoric and Latin poetry, and also style. The third section was known as the course of philosophy, and was similarly a two-year course. Philosophy, mathematics, physics, and history were included in this last. There were, however, but few colleges which maintained a course of philosophy. This division is practically much the same as *trivium*.

The law of 1883 reformed the whole scheme of Hungarian secondary education. The grammar division was replaced by the lower gymnasium, while the humanities and the philosophy course became the upper gymnasium, which closed with the certificate of "maturity."

The Real School appeared also, in its turn. Up to 1875 it had but six classes, which increased in that year to eight, when it was first ranked as a secondary school.

The secondary schools of Hungary are to-day either Gymnasia or Real-schools, the former being the classic schools, and the latter teaching modern languages, mathematics, and the natural and physical sciences. *They are of the same grade, and are co-ordinated.* By the law of 1890, students were allowed to *abandon the study of Greek* if they so desired, provided they followed a course known as the "compensation course." This required a fuller knowledge of the literature of the mother-tongue (Hungarian), the reading of Greek literature, in Hungarian

Hungarian translation, and the practice of drawing. In 1897–8 the pupils of the four higher classes in the Gymnasia numbered 14,659, of which 10,041 learnt Greek, and 4,618 elected the compensation course. There are, therefore, now three types, viz. :—

(i) Latin–Greek; (ii) Latin; (iii) No classic language.

The ratio of the numbers of students who obtain the maturity certificate in the three types of schools is—

(i) : (ii) : (iii) = 6 : 3 : 1

Pupils who take only Latin may receive the special privileges of the Latin-Greek section by passing a complementary examination in Greek; and, similarly, those who take the third division must pass a complementary examination in both Latin and Greek, and so on.

Both classes of schools have eight classes, covering eight years. *They admit pupils who have passed through the four classes of any primary school whatsoever*, and who consequently can "read, write, and cypher." In the absence of the certificate of the primary school an admittance examination is held, and in the secondary schools advancement depends upon passing the examination in each class at the end of the year. The *baccalauréat* of France does not exist in Hungary, but the *maturité* admits to the various faculties of the University, etc.

Hungary has about 194 secondary schools for a population of say 17½ millions.

Woman are admitted to the University for the courses in teaching, medicine and pharmacy, through the recent reform movement (1895), and there are now secondary schools for young women.

Hungary affords an example of the possibility of organising independent educational institutions under a common régime [Chap. X, Secs. 4 to 6], and its schools are being steadily brought under a unified scheme.

The Curricula will be found in Chap. X., Sec. 17.

The examination at the close of the Real School and Gymnasium is, like the *Maturité*, the *Absolutorium*, or the *Arbiturienten Examen*, the matriculating examination for higher education. It qualifies for entrance to the Polytechnicum or University. There are three degrees in the pass, viz. :—1, Excellent (jeles); 2, good (jó); 3, sufficient (elégséges); and those who fail are known as insufficient (elégtelen). The examination is in part written and in part *viva voce*. Great attention is paid to the perfection of the composition in Hungarian. The written examination covers the following subjects, viz. :—

I. *Gymnasium.*—(*a*) Hungarian composition; (*b*) German translation; (*c*) a thesis in Latin; (*d*) Greek translation; (*e*) mathematical problems.

II. *Real School.*—(*a*) German or French composition; (*b*) Mathematical problems. Five hours are given to each subject, and the examination is with closed door, and under surveillance.

In the *viva voce*, forty-five or fifty minutes are devoted to each pupil, the interrogation being by the Professors; but the President and Ministerial Commissary have also the right to put questions. The interrogatories cover the following subjects, viz. :—

I. *Gymnasium.*—(*a*) Hungarian language and literature; (*b*) Latin language and literature; (*c*) Hungarian History; (*d*) Mathematics—viz., Algebra and Geometry; (*e*) Physics.

II. *Real School.*—(*a*) Hungarian language and literature; (*b*) German language and literature; (*c*) Hungarian History; (*d*) Mathematics—viz., Algebra and Geometry; (*e*) Physics.

Where the mother-tongue is not Hungarian, there is also an examination therein; over 80 per cent. pass the examinations.

The schools in Hungary seen by the Commissioners are finely equipped; some reference is made to this matter in Chap. XXIX.

For further information, reference should be made to Chap. X. The Hungarian student is more than ordinarily well-informed.

6. *Secondary Education in Belgium.*—By the law of 1st June, 1850, ten State Athenæums (Athenées) were organised, and a number of colleges were subsidised. The number was increased under the law of 15th June 1881. Flemish was made the language for instruction in the Flemish provinces on 15th June 1883. On the 20th September 1884, the number of *athenées* was fixed at twenty. [See Chap. XI, sec. 5.] On the 6th February, 1887, 10th April 1890, and 3rd July 1891, laws defining the necessary qualifications for the teaching staff (directors and professors, etc.) of the secondary schools were passed. Briefly stated, it is necessary to possess the doctorate in philosophy, *i.e.*, in philosophy in the strict sense, in classic, Romanic and Teutonic philology, in mathematics and physics, or in natural history. [Chap. XI, sec. 3 and 4.]

The secondary schools of Belgium may be divided into at least four kinds :—

(1) Royal Athenæums (*Athénées Royaux*)—that is, State establishments.

(2) Municipal or Communal schools, which are known as Colleges (*Collèges*).

(3) Confessional schools—that is, schools founded by different religious bodies.

(4) Higher Private schools, generally known as Institutes (*Instituts*).

The Athenæums are the State secondary schools. The municipal schools or colleges are equipped practically in the same manner as the State schools. Their plan of instruction must be that issued by the Government ; their school regulations, books, and general arrangements must be ratified by the Government, and they are under official supervision. The "*Collèges*" are subsidised by the State, according to the size of the community, and it may be noted that *that there are no communal colleges which are not so subsidised.*

The confessional schools are under the control of a Bishop or of a religious order, and such schools are very variously designated—*e.g.*, *Collège*, *Institut*, *Séminaire*, *petit Séminaire*, *Ecole*, *etc.* Some of these are supported by State and communal subsidy ; they are then subject to the State supervision.

The schools wholly supported by religious orders have their own regulations and administration.

The Royal Athenæums are directly under the charge of the "*Ministre de l'Intérieur et de l'Instruction publique.*" The immediate head of the Department is the "*Directeur-général.*" The most complete scheme of organisation under religious bodies in Belgium is that under the Archbishop of Malines (Mechelen), the ecclesiastical capital of Belgium. The chief officer under the Archbishop is the "*Directeur-général d'instruction moyenne.*" Under the Director-General are the inspectors (*inspecteurs*), the directors of the schools (*préfet des études*), the professors (*professeurs*), and teachers (*maîtres*).

For general supervision and control of the secondary schools, the Government depends upon the following, viz.:—

(i) An Administrative Bureau (*Bureau d'administration*) for each Athenæum.

(ii) An Improvement Council (*conseil de perfectionnement*).

(iii) The Inspectors (*inspecteurs*).

(iv) Examinations (*concours*).

The Administration Bureau consists of—(*a*) the Burgomaster and his aldermen; (*b*) six persons appointed by the State, and double that number from the Communal Council. No active teacher may belong to this Bureau.

The Improvement Council, meeting always in Brussels, has under review the curricula (*programmes des études*), the text-books, etc.; it proposes directions for the inspectors, reads their reports, and advises as to all possible improvements.

This Council consists of from eight to ten members :—A councillor of the Court of Cassation, a former vice-president of the Chamber of Deputies, a permanent provincial representative, the director of the Military School, and six University professors. Besides these ordinary members, the *Sécretaire-général* of the Minister, the *Directeur-général* of higher education, the inspectors, and four of the Minister's nominees from among the directors and professors of the Athenæums, are members of the Council. It meets four times yearly.

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The parallel courses of the secondary schools may be divided into three analogous to the three in the German schools. They are:—

Greek-Latin Humanities;	Latin Humanities;	Modern Humanities;
Humanités grecques-latines;	Humanités latines;	Humanités modernes;

corresponding to the Gymnasium; Realgymnasium; Oberrealschule.

The curricula, which are slightly different in respect of the languages in the Wallon and Flemish provinces, are given in Chap. XI, sec. 6.

Sufficient detail as to the authors read, and the treatment of the various subjects, is given in the chapter mentioned, to which reference may be made.

7. *Secondary Education in Denmark.*—The development of the educational system of Denmark was greatly influenced by the earlier systems of Prussia, France, and the lesser German States. About 1836, C. F. Ingerslev made a journey into the countries mentioned and published a report in 1841. After some experimental changes in the then existing régime, a scheme by N. J. Madvig was put into execution in 1844. His system involved serious overburdening of the pupils. Continued and vigorous complaints led to the matter coming before Parliament in 1860, resulting in some alleviation in 1864, after school children had paid the penalty for twenty years of Madvig's influence on the educational system. The present organisation was introduced by the school law of 1871.

Education is now under the general control of a Public Instruction Department (or rather an Ecclesiastical and Education Department—*Ministeriet for Kirke- og Undervisningvæsenets*), but there are, besides State, both Communal and Private Schools, and till as late as 1890, it was not necessary for even Directors of communal or private schools to pass any examination whatever. The different types of schools, whether public or private, must at the present time submit to inspection, the inspectors being triennially appointed by the *Ministeriet*.

The preparatory course is in a school of six classes, the pupils commencing at 6 or 7 years of age. It is the same for all sections. The *secondary school proper* commences at 12 years of age at the earliest. Its first two classes have parallel courses, viz. "Real" and Latin. Greek is not therefore taken till 14, at the earliest. The next two classes have three divisions, viz. the "Real" (*real*) without Latin, the Mathematical (*matematisk*) with Latin but without Greek, and the classical (*sproglig*) with both Latin and Greek. The two highest classes are known as the "*studerende klasser*" and have only two divisions, viz., the Mathematical with neither Latin nor Greek and the Classical with both.

For the general outline and details of the curricula, the organisation and qualification of the teaching staff, etc., reference should be made to Chap. XII.

There are three examinations for pupils—one at the end of the second stage (Class IV—*Hovedeksamen*), and two others, viz., the *Almindelig Forberedelseksamen* and the *Afgangseksamen*[1]. Of the two last, the former admits to the Polytechnicum, to the forestry examination, and to the postal service. With two foreign languages it also admits to the agricultural school, to the lower juristic examination, to the school of naval architecture, etc., to certain military examinations, to those for dentistry and pharmacy, and to the railway service.

The *Afgangseksamen*, on the literary side, qualifies for the University; on the mathematical side it also qualifies for the University, excepting, however, the faculties of theology and law; and it qualifies for entrance into the Polytechnicum.

For further information reference should be made to Chapter XII.

8. *Secondary Education in France.*—The fundamental lines of the present organisation of Public Instruction in France were laid down by the National Convention, and practically completed by the Government of Napoleon I. Chapters XIII to XVIII inclusive are devoted to an account of the French system and the elucidation of recent reform therein.

At the head of the administration of Public Instruction in France is the Minister under whom the central administration is charged with the direction of secondary education. The details are dealt with by four bureaux. The Minister, who personally is not necessarily an educational expert, is advised by a Higher Council (*Conseil supérieur de l'instruction publique*) of a most representative character, and competent, in virtue of its constitution, to advise on all questions with which

[1] The final examination.

which the Minister is likely to deal. [Chap. XIII, sec. 3.] Besides the Minister himself there are forty-six representatives of higher education, six of primary education, and four of *private* education, the members being appointed for four years. From the whole a *permanent section* of fifteen members are appointed, charged with the following duties, viz. :—

(*a*) To study the programmes and regulations before they are submitted for the opinion of the "*Conseil supérieur.*"
(*b*) To advise as to the creation of faculties, lyceums, colleges, primary *normal* schools.
(*c*) To advise as to the creation, changing, or suppression of chairs.
(*d*) To advise concerning the class, library, and prize books which should be interdicted in the public schools.
(*e*) To advise concerning all questions relating to the courses of study, the administration, the discipline, or the length of curriculum, etc., which may be remitted to them by the Minister.

The Council itself advises as to—

(*f*) Programmes, methods of teaching, modes of examining, administrative and disciplinary regulations relative to public schools, which the permanent section have previously studied.
(*g*) Regulations concerning examination and comparison of degrees.
(*h*) Regulations concerning the supervision of private schools (*écoles libres*).
(*i*) Books for teaching, reading, or for prizes, which ought to be prohibited in private schools, as contrary to morals, to the Constitution, and to the law.
(*j*) Regulations relating to applications from foreigners to be authorised to teach, to work, or to direct a school.

For administrative purposes, France is divided into academic districts (*circonscriptions académiques*), in each of which there is an academic council (*conseil académique*) analogous in constitution to the *conseil supérieur*. [Chap. XIII, sec. 7.]

Secondary education is given in lyceums (*lycées*) and colleges (*collèges*). The former are *State* institutions, the latter *Communal*, and the names are determined by the law of 25th February, 1860. Contingent upon the recommendation of the Council, the Minister for Public Instruction may allow an approved private institution to bear the title "private college" (*collège libre*).

For details of the organisation reference should be made to Chap. XIII.

The organisation and professional education of the professorial staff of the lyceums and colleges are elaborate, and consequently a chapter has been devoted to each subject, viz. Chaps. XIV and XV. It is to be remembered that the *baccalaureate* is conferred by these institutions, and that a high standard of qualification must necessarily be maintained. The professional obligations of the teaching staff are indicated in the Report [Chap. XIV, sec. 15], and it will be observed that the maximum service, in hours per week, averages about fourteen, thus affording ample time for higher studies and the maintenance of general culture.

The elaborate provisions for the professional education of the teaching staff are outlined in Chap. XV, to which reference should be made. For the *lower* classes of the secondary school, the master must be at least 20 years of age and have obtained a special certificate (*certificat d'aptitude au professorat des classes élémentaires de l'enseignement secondaire*). Before presenting himself for examination he must have obtained the diploma of bachelor, or some other qualification practically of the same order. [Chap. XV, sec. 5.]

The following will be a sufficient general indication of the standard to be reached :—

Candidates for secondary teaching, in which the degree of *licencié ès sciences* is required, must possess a diploma shewing that they have satisfied their examiners in the following subjects, viz. :—

I. (*a*) Differential and integral calculus.
(*b*) Rational mechanics.
(*c*) Astronomy, or one other subject among the mathematical sciences.

II. (*a*) General physics.
(*b*) General chemistry.
(*c*) Mineralogy, or one other subject among the mathematical or physical sciences, or natural history.

III. (*a*) Zoology. (*b*) Botany. (*c*) Geology.

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The organisations of the French system of secondary education is as follows :— The first stage is an elementary division (*division élémentaire*) consisting of a preparatory class, and two later classes, pupils being about 11 years of age on passing out of it into the next stage, the grammar division (*division de grammaire*). This latter lasts three years, hence the pupil is 14 years of age on leaving it for the higher division (*division supérieure*) of secondary education.

Up to the school-year 1901–2, the grammar stage was sharply divided into the classic and modern schools, Latin being taken at 11, and Greek at 12 years of age. The higher division was similarly divided into the classic and modern sides in the two first classes, viz. III, 14–15; and II, 15–16. Then each was subject to two further subdivisions in the highest class, viz. I. These were—on the classic side, rhetoric and philosophy; on the modern side, literature and science.

The experience gained by the Commissioners as to the scepticism in regard to the excellence of European education of those who had supposed and asserted that the educational system of this State was unparalleled for excellence, has shewn the necessity of supplying detailed information as to curricula. The Commissioner, here writing, has therefore translated the entire programmes of the *Division Supérieure* of the French *Lycées* and *Collèges* as they stood up to the year 1901–2 [Chap. XVII, secs. 4–16], together with the conditions for admission to the Ecole polytechnique. These afford an opportunity for forming an independent judgment as to the grade of the teaching in the French secondary schools. Bearing in mind that the equipment of the schools, and the teaching actually witnessed by the Commissioners, entirely support the testimony of the curricula, it is obvious that despite certain defects therein,[1] *secondary education in France reaches a plane of excellence far beyond what is attained in this State.*

Considerable reform has taken place during the last few years in French education, and two chapters have been devoted thereto, viz., Chap. XVI [by J. W. Turner] on the re-organisation of the curricula, to which reference should be made for details, and Chap. XVIII [by G. H. Knibbs]. The exposition of educational principles in this last chapter, translated from the directions to teachers, will reveal what progress has been made since the date of the sharp criticism referred to in the footnote hereunder.

9. *Secondary Education in Germany.*—The federation of the German Empire in 1871 did not include the school-system, so that Prussia, Bavaria, Saxony, Würtemburg, Baden, Hesse, Mecklenburg-Schwerin, and Mecklenburg-Strelitz, and Elsass-Lothringen have each their own systems. An Empire School Commission (Reichs-Schulkommission) was however founded on 19th February, 1875, as the result of a conference held on October, 1872, at Dresden, [for details, see Chap. XIX, sec. 1], and though there is not absolute identity, there *is* substantial uniformity in the organisation of secondary education throughout the German Empire.

Education has been long and well organised in Germany, and some detailed reference thereto is consequently desirable.

Almost immediately after coming to the throne in 1713, Frederick William I of Prussia issued regulations governing schools and Gymnasia and their inspection, etc. (Die evangelisch-reformierte Inspektions, Presbyterial-, Klassikal,[2] Gymnasien- und Schulordnungen). After the "Seven Years' War" Frederick II (the Great) also gave attention to the matter of public education—in fact, this is said to have constituted the hobby-horse of his old age ("Steckenpferd seines Alters." The Minister for State and Justice, Baron von Zedlitz Leipa, was placed in charge of the school department. The Philanthropinist Trapp was made Professor of Pædagogy at Halle, and also the Philologist Friedrich August Wolf. The educational activity of these two men made a new epoch in higher education not only for Prussia, but also for the whole of Germany. The

[1] The criticism of Dr. Reinhardt, Gymnasial Director in Frankfort a/M, in his "Vortrag über die Bedeutung des gemeinsamen Unterbaues für die höheren Schulen" (Discourse concerning the significance of a common preparation for the higher schools. See Mitteilungen des Vereins für Schulreform in Bayern, München, No. 7, April, 1897) is worth noting. He says :—"Wir können diesen letzteren Einigungspunkt klarer zum Bewusstsein bringen und den grossen Fortschritt erkennen, der sich auf dem Gebiet des Unterrichts während des letzten Jahrhunderts in Deutschland vollzogen hat, wenn wir unser Lehrverfahren mit dem anderer Länder vergleichen. Im Frankreich wie in England ist das Verfahren im wesentlichen noch dasselbe wie im Mittelalter." (We can bring this last point of agreement into clearer view, and appreciate the great progress which in the last century has been made in Germany within the province of education, *if we but compare our teaching-method with that of other countries. In France, as in England, the method is practically identical with that of the Middle Ages*). The serious attention of the reader to what is implied in this passage is urged by the Commissioner. It unfortunately has too much truth in it to justify complacency.

[2] "Klassikal" means parochial.

The next conspicuous moment in the history of German education occurred in 1807. Prussia, after the battle of Jenna, was in a sorry plight, but Frederick William's decision was that "Der Staat muss durch geistige Kräfte ersetzen, was er an physischen verloren hat." (The State must retrieve by intellectual power what it has lost through physical.) Through Wilhelm von Humboldt and Wolf secondary and higher education was firmly established. In 1817, "Kultus und Unterricht" (Public Worship and Education) acquired its own proper Ministerium, which remained under the charge of Baron von Altenstein until 1840. It was during his ministry that the first Normal programme (Normallehrplan) was developed (1837). Passing over the history of educational activity till the period following the Franco-German War, we may notice that Dr. Falk entered into office about 1872, and under him Hermann Bonitz had charge of higher education in 1875.[1]

The reform of the Gymnasia was again earnestly considered, and a considerable number of Gymnasia and Realschools were established. Following on Falk, von Puttkamer held office for a short time, and then Dr. von Gossler (1881–1891). Under his régime special attention was paid to physical exercises and gymnastics, the tasks of the pupils were moderated, and the programmes were revised. The present Emperor William II, at one time a pupil in the Gymnasium in Kassel[2], had no sooner ascended the throne than he devoted himself earnestly to educational matters. At his command, a Conference to inquire into questions of higher education was held in Berlin, from the 4th to the 17th of December, 1890. This Conference consisted in part of practical teachers, and in part of interested laity in various walks of life; it was presided over by the Kaiser himself. He opened it with an able speech, which shewed that in his view it was desirable that *the centre of gravity of German education should be so moved as to more closely accord with the demands of the modern world*, and that it should conform to the necessity which recent history, both in Germany and elsewhere, pointed out as desirable. The Kaiser believed also that the educational system should be reformed so as to simplify the instruction, and further so that it should reinforce the power of the German youth, and his aptitude for military service.

The consequence of this meeting was the constitution of a special Commission of seven members, at the head of which was placed the former master of the Kaiser, Geh. Rat. Dr. Hinzpeter. This Commission worked out for the Gymnasia and Realschools the new programmes, which came into force in 1892. Latin had a much less conspicuous place than formerly. To strengthen the educational spirit, the decree of the 28th July, 1902, improved also the rank of the teachers of secondary education. All higher scientific teachers were called "Oberlehrer," and the higher third of these received the title "Professor."

Secondary education in Germany commences generally at the age of 9, the education from 6 to 9 being in a folkschool, or in the preparatory schools of the three types of secondary schools. The types are (i) *Gymnasium;* (ii) *Realgymnasium;* (iii) *Oberrealschule—i.e.*, classical school; Latin—modern school; modern school. Originally certain privileges existed for the students who passed through the *Gymnasien*, and it was "bad form" in certain circles to have been educated in (ii) or (iii). An imperial decree dated 26th November, 1900, conferred equality of general and academic privileges on the three types of secondary school. This decree affirmed that with reference to the question of privileges, the principle adopted shall be that the *Gymnasium*, *Realgymnasium*, and *Oberrealschule* be regarded as of equal value from the point of view of general intellectual culture. In so far as special lines of study and professional pursuits require particular branches of knowledge, which do not enter into the curriculum of each institution, or do not enter to the requisite degree, it will be necessary to take only supplementary studies. Hence steps are to be taken to extend the privileges of institutions with a non-classical curriculum. *This is the best means of raising the repute and increasing the attendance at these institutions, and of bringing about a wider spread of modern and practical subjects.*

This movement has had a profound influence on German education, and the feeling is widespread that the movement is an advance, not a retrogression.

Another

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[1] Bonitz, it will be remembered, took a prominent part in the organisation of Austrian education.

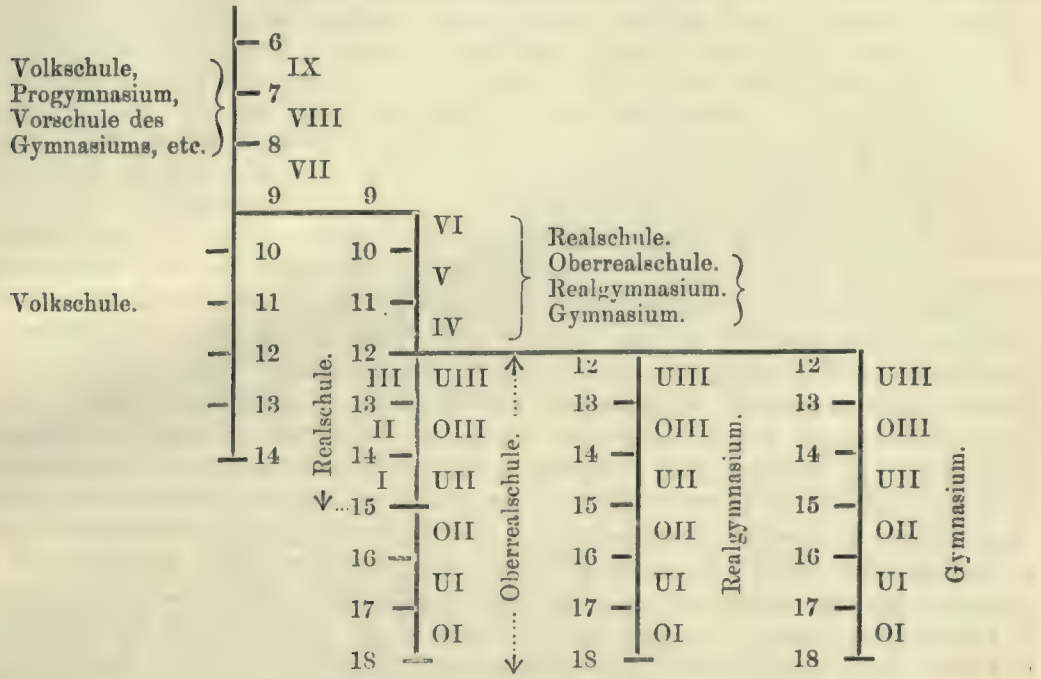
[2] It has been stated that the father of the present Emperor was induced to give his son this type of education by Prince Bismarck. Dr. Hinzpeter was director.

Another important movement in Germany is the redetermination of the curricula so as to secure uniformity in secondary-school education up to the age of 12. The following diagram shewing the co-ordination will explain the matter at a glance.

In the old system the subjects of study from 9 to 12 (classes VI to IV) were *not* identical for the three types of secondary school; under the reform system they are identical.

REFORM SYSTEM OF PRUSSIA.

Secondary Education.



It will be seen that *the Reform pos/pones the necessity for a decision as to career till* 12 *or* 13 *years of age.*

In the judgment of the Commissioner, *the securing of identity of secondary education up to the latest possible period, and a recognition of the academic equality of the several forms of higher education are among the most important of recent educational advances.*

In this connection it should be pointed out that *this identity is significant only with thorough education.* An assertion that any particular system, which happens to exhibit no differences in education up to the age of 12 or 13, expresses the same principle, merely because, for example, it includes, practically, only the three R's, misses the whole point. The Reform system of Germany is really a preparation for the higher stage of secondary education, and has within it the true disciplinary elements, and is sufficiently broad.

It may be added that to continue the uniformity till a later period is impracticable.

The details of the curricula for the three types of schools are given, both for the general or ordinary system [Chap. XIX, sec. 3], and the reform system [Chap. XIX, sec. 5]. In order to bring out clearly the nature and effect of the reform, an analysis is given of the ordinary curricula [sec. 4], and comparisons are made between the two systems [secs. 4, 5, and 6].

The Commissioners travelled over a considerable part of Germany, and obtained programmes of a great number of schools. The fact that each kingdom, or grand duchy, in the Empire had independently studied education, indicated the desirability of a comparison of the various curricula. This has been undertaken for each type of school and for each subject of study [see Chap. XIX, sec. 7].

The history and development of secondary education, the curricula, etc., are given for Bavaria [secs. 8, 9]; for Saxony [secs. 10, 11]; for Württemberg [sec. 12]; for Baden [sec. 13]; for Karlsruhe [sec. 14]; for Hesse [sec. 17]; and a short reference is made to other parts of Germany [sec. 18].

Chapter XX [by J. W. Turner] is also devoted to a consideration of the secondary system of Germany.

The

The very thorough education of the German teacher, and the scheme of theoretical qualification for his office are discussed in Chap. XXI. The method of practically training him in the art of teaching is outlined in Chap. XXII.

The following reference to the history of the subject is important as shewing that the present system is the outcome of a long critical review of it.

The existing scheme of ensuring the thorough qualification of secondary teachers, dates back, practically to 1804, though its fundamental form was not acquired until W. von Humboldt, with Schleiermacher and Süvern, developed the regulations for examination in 1810. This examination ("*examen pro facultate docendi*") consisted of written papers, oral examination, and test lectures, covering the subjects of philology, history, and mathematics. From 1827 the teachers of the Higher Burgher Industrial, and "Real" schools have also been required to pass examinations in mathematics, the natural sciences, history and geography, the German language and literature, theology and the modern languages. A regulation in 1831 distinguished between the examinations, (1) *pro facultate docendi*, (2) *pro loco*, (3) *pro ascensione*, and the (4) *colloquium pro rectoratu*. The qualification acquired was to teach either two or one principal subjects (Hauptfächer) in the upper classes, these being (1) Greek, Latin; (2) German; (3) Mathematics; (4) Natural science; (5) History and Geography; (6) Theology and Hebrew. On the 12th September, 1866, a new modification was established (Reglement für die Prüfungen der Kandidaten des höheren Schulamts). This covered the general preliminary education (allgemeine Vorbildung) of every candidate, and also his general education in the religious tenets of his denomination, in philosophy and pædagogy, in history and geography, and his knowledge of languages. Every candidate had to write an essay on some philosophical or pædagogical subject; and then he had to pass an examination in scientific subjects, contributing further one or two written papers thereon. Finally, there was an oral examination over the range of general education and the elected subjects. The qualification covered, as it were, three stages, viz., the right to teach in the three lowest, the three middle, or the three highest classes of the gymnasium. It now covers two stages.

On the 5th February, 1887, a new regulation (Ordnung der Prüfung für das Lehramt an höheren Schulen), which is almost identical with that of to-day, appeared. Those actually in force are constituted by the "Ordnung der Prüfung für das Lehramt an höheren Schulen, von 12th September, 1898" (Regulations of the examination for the teaching-office in higher schools). There have since been some slight modifications. [Chap. XXI, sec. 2.]

The scheme of practical training had its origin in the "*Seminarien*," the first being that opened by F. A. Wolf, at Halle, in 1787. The first State institution of this character was founded by Gedike in 1788, when 5 "*Seminaristen*" acquired a practical knowledge of the art of teaching, receiving a salary of, say, £22 per annum at the same time.

The scheme is outlined in Chap. XXI, secs. 3 and 6.

10. *Secondary Education in Greece.*—Troublous times commencing in 1821, and lasting nearly a decade, mark a division between the earlier and existing forms of Greek education. That period, in fact, forms educationally a sort of turning-point.

The reorganisation of the whole system may be referred back to an event of the 31st March, 1827—the election of Count Johannes Kapodistrias as President of the Free Greek States. He endeavoured to establish a solid future for the people through a complete reformation of the school system. Thus, to overcome the disasters of Greece, he proposed, practically, the same remedy as did Frederick William III, of Prussia, for his country. Kapodistrias had, however, brought high-handed ideas of ruling from Russia—having been in Russian service—and was assassinated in 1831, in consequence.

With the arrival of Otho I, the work initiated by Kapodistrias was further developed. The Bavarian regency during the minority of the King and his Bavarian traditions were reflected to some extent in the organisation and the earlier traditions of Greece, though not wholly superseded, were profoundly modified in the resulting educational system.

A decree of 31st December, 1836 (ὁ ὀργανικὸς νόμος), established a scheme of administration and general organisation which, with but slight modifications, exists even to-day. Consistently with a scheme which obtains almost throughout Europe,

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the highest authority for all Church and School affairs is the Minister (*ὁ ἐπὶ τῶν ἐκκλησιαστικῶν καὶ της δημοσίας εκπαιδεύσεως ὑπουργός*). The highest officer immediately under him in the Ministerium is the State Under-Secretary (*ὁ γενικὸς γραμματεὺς τοῦ ὑπουργείου*), who is in charge of the general business in the administration of higher school affairs.

Greece is divided into sixteen "departments" (*νομοὶ*); in each there is a School Commission, with certain rights of supervision over the schools at the seat of every Nomarch (*ὁ νομάρχης*). Two members are elected by the Communal Council from among the educated people of the place (doctors, advocates, superannuated teachers, etc.). These, together with the prefects as presidents, constitute the Commission. Although the law would appear to make their office significant and extensive, it is actually very limited.

Greece has not adopted any system of regular inspection and supervision of the schools, but from time to time special visitations are arranged by the Ministerium, the inspection being undertaken by University Professors. The object of these visits is however rarely pædagogic. The general condition of the administration of the school system can hardly be regarded as satisfactory.

The foundation of the whole Grecian system, is the *Elementary School.* Lancaster's monitorial method of instruction was not wholly unknown, hence the name "mutual-teaching schools" (*ἀλληλοδιδακτικὸν σχολεῖον*). Later, this organisation was improved. At the present time the elementary school is known as the "*folk*" *or demotic school* (*τὸ δημοτικὸν σχολεῖον*).

From this, one goes on to the "*Hellenic School*" (*ἑλληνικὸν σχολεῖον*) a sort of Middle or Burgher School, and at the same time a Preparatory School for the Gymnasium. Then the pupil may pass to the *Gymnasium proper* (*τὸ γυμνάσιον*), where the "humanistic" education, commenced in the Hellenic School, is continued.

The duration of the courses of study in these three types of school is as follows:—In the first or demotic school the pupil spends four years. The three following years are spent in the Hellenic School. The Gymnasium period, which follows is four years. In order to pass from each school to the next above it, a qualifying examination must be passed at the close of the preceding course.

Though both the Hellenic school and the gymnasium are humanistic schools, their teachers have different rank and are differently organised.[1]

The Curricula of an Hellenic school, of a Greek Gymnasium, of a Greek Realgymnasium, and of a Realgymnasium of a Greek school at Pera, in Turkey, are given in the Report [Chap. XXIII., secs. 5, 6]. Programmes recently received by the Commissioner differ slightly from these, but the variation is educationally of limited importance.

II. *Secondary System of Holland.*—On the ascension of William I. to the throne of Holland, he entered upon reform in the domain of higher education, and on 2nd August, 1815, approved the recommendations of a Commission previously appointed.

The laws actually governing secondary education as it now stands are dated 1863 and 1876. [See Chap. XXIV., sec. 2.] Its origin may be referred back to the *Latin school*, first established in 1625, the official instructions of 1648 requiring Latin to be practised at all times both *within* and *outside* the school. In 1815 it was decided that both Latin and Greek should be invariably taught. In 1826 Athenæums were established. These were institutions intermediate between the Gymnasia and University. Excepting the *Athenæum Illustre* of Amsterdam, they have been altered either into Universities or into Gymnasia (1843). In 1838 the "Real" type of school appeared. In

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[1] The Hellenic schools, if complete, are under the direction of a "Scholarch" (*ὁ σχολάρχης*), or when small—consisting of one or two classes—they may be merely in charge of a teacher. The Gymnasium is presided over by a Director or Gymnasiarch (*ὁ γυμνασιάρχης*), at least if it have four classes. When complete the Gymnasia are known as "*πλήρη γυμνάσια*," but when consisting of only three or two classes, they are known as "*ἡμιτελῆ γυμνάσια*" or "*ἡμιγυμνάσια.*" In the latter case an ordinary Gymnasium teacher may preside. The gymnasial teachers (*καθηγηταὶ τῶν γυμνασίων*), whose rank is higher than the teachers in the Hellenic school, have the equivalent of the title professor. The teachers of gymnastics, caligraphy, and drawing are teachers merely for the respective subjects, and are known as "*οἱ διδάσκαλοι τῶν τεχνικῶν μαθημάτων*" (*τῆς γυμναστικῆς, τῆς κᾶλλιγραφίας, τῆς ἰχνογραφίας*). The teachers of the Hellenic schools, "*οἱ διδάσκαλοι τῶν ἑλληνικῶν σχολειῶν*," or "*ἑλληνοδιδασκαλοι*," are divided into three classes of categaries, (viz., "*πρωτοβάθμιοι*," "*δευτεροβάθμιοι*," "*τριτοβάθμιοι ἑλληνοδιδάσκαλοι*") according to the result of the examination for their official position. Probationary and assistant-teachers are unknown.

In the present scheme of Holland, secondary education is provided in two classes of schools, viz., the *Higher Burgher Schools* and the *Gymnasia*. Though the courses are parallel, the former is *legally* only a middle grade of instruction (middelbaar onderwijs), while the latter belongs to the higher grade (hooger onderwijs). Practically, the Higher Burgher School, with a 5-year course, is the equivalent of the German Higher Real School (*Oberrealschule*).

Every community of over 20,000 inhabitants is compelled by law to equip and maintain a Gymnasium, and communities of 10,000 inhabitants maintain also a Higher Burgher School.

The Minister of the Internal Affairs (*Minister van Binnenlandsche Zaken*) is at the head of the Educational System, and keeps touch with the educational institutions through Inspectors (*inspecteurs*). Each Gymnasium is governed by a communal council, known as the college of curators (*het collegie van curatoren*), the administration of educational affairs generally being communal, though if the schools receive State subsidy the appointments must be ratified by the Minister. [Chap. XXIV, sec. 5.]

In the system of Holland, French is the only language besides the mother-tongue up to the age of 12 years, the age of entrance into the Gymnasium. The curriculum for classes I to IV is then identical, but in classes V and VI a division is made, the branches being the *humanistic* and *real*. Greek and Latin are taken in both, the hours per week being for Latin 8 and 8 on the humanistic, against 5 and 4 on the real side, and for Greek, 6 and 7, against 4 and 4.

Very little Science exists on the humanistic side, physics and chemistry being omitted altogether. A little natural history, however, is taken, 2 hours a week in classes I and II.

The Higher Burgher School has a 5-year course, and includes French, German, and English. It is essentially a far more liberal course than that of the Gymnasium, and as a practical preparation for most careers is to be preferred.

Programmes are given for the Gymnasia [Chap. XXIV, sec. 8] and the Higher Burgher Schools [sec. 12].

To illustrate the completeness of organisation in European schools a translation is given of a time-table [sec. 13].

The equipments are excellent in Holland, and the teaching staff highly qualified. For fuller information reference should be made to the chapter previously mentioned.

12. *Secondary education in Italy.*—Until quite recently the secondary schools of Italy were exclusively classical, the grades being (1) grammar, (2) humanities, (3) rhetoric. Later a little philosophy and mathematics were added to the curriculum, and still later science. In 1803 a lyceum (*liceo*) was founded in Milan. In 1807 a school was established with a lower division of 4 years *without Greek*, and without mathematics and natural science, but having a three-fold upper division of 2 years, viz.,—(1) Mathematics; (2) Natural Science; (3) Jurisprudence. In 1840, arithmetic, local history, and geography were added to the curricula of the classical schools in Piedmont. On 4th October, 1848, the higher schools were divided into (i) "classical" or (ii) "special," that is, linguistic or realistic. An attempt, in 1850, to restrict secondary education to the classical form was defeated, and the "special" schools were strengthened by Cibrario in 1853, and by Lanza in 1855 and 1856.

Italian secondary education as it now stands reflects largely the work of Gabrio Casati, (Law of 13th November, 1859) who distinguished between "classical" and "technical" schools, and who endeavoured to organise education throughout Italy. Previously to Casati's time education was practically wholly in the hands of the ecclesiastic and monastic orders; he centred the administrative authority in the State, dividing education into (1) Higher Education; (2) Classical Secondary; (3) Technical and primary—*L'istruzione superiore; L'istruzione classica; L'istruzione tecnica ed elementare.* These various branches are now so organised throughout Italy, that a pupil may commence his education in any part of the kingdom and complete it in any other part, without loss of time.

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The schools may be divided into—

(i) Royal or State Schools *(scuole governative)*.
(ii) Provincial Schools *(scuole provinciali)*.
(iii) Communal Schools *(scuole communali)*.
(iv) Ecclesiastical and Private Schools *(scuoli private)*.

The Minister of Public Instruction is the head of the system; he is advised by a Higher Council, and keeps touch with the whole system through this, and through an Inspector-General of Higher Education (*L'ispettore-generale degli studi superiori*), an Inspector-General of Secondary Education (*L'ispettore-generale degli studi secondari classici*), and an Inspector-General charged with the supervision of technical, primary, and normal schools (*L'ispettore-generale degli studi tecnici e primari, e delle scuole normali*). [For details, see Chap. XXV, sec. 4.]

The Provincial Administration, as contradistinguished from the Central Administration, is under a Provincial Council (*Consiglio, provinciale scolastico*), the Prefect (*prefetto*) being its head. This arrangement often leads to trouble when the Prefect, not being an educationist, exercises his powers indiscreetly. It is regarded as unsatisfactory by many Italian educationists.

In the Italian system the children before 6 years of age are dealt with by the Kindergartens, the *Asili infantili*, etc. The three Classes I to III (children from 6 to 9 years of age) constitute the lower division of the elementary school, and Classes IV, V, ages 9 to 11, its upper division.

The Gymnasium (*ginnasio*) commences at 11 years of age, classes I, II, and III constituting its lower division. Latin is taken in each class, but French does not commence till the third (13 years). Classes IV and V constitute the higher division, Greek being taken in both classes. The Lyceum (*liceo*) of three classes commences at 16 years of age. Greek and Latin are taken throughout, but not French. [Chap. XXV, secs. 5, 6.]

Obviously the Gymnasium and Lyceum in the Italian system are two grades in a secondary system, not dissimilar to the *Unter-* and *Obergymnasium* of Germany.

The Technical School and Technical Institute (*scuola tecnica e istituto tecnico*) are similarly two grades comparable to the German *Realschule* and *Oberrealschule*. The school has three classes, and the institute four. [For details see Chap. XXV, secs. 8, 9.]

Recent reforms tend in the direction of requiring better professional training of teachers.

Italy labours educationally under two great difficulties—the illiteracy and want of ambition of the peasant class (*contadini*) and the language difficulty. The *lingua toscana* is considered "affected," except, of course, in Tuscany, even by the better classes; hence in the lower schools a teacher from Florence cannot be sent to Naples, nor one from Rome to Genoa.

For a fuller conception of Italian secondary education reference should be made to Chap. XXV.

13. *Secondary Education in Russia.*—Some reference was made in the Interim Report to the state of education in Russia. [Chap. VII, secs. 1–15, in particular secs. 12, 13, pp. 80–85.]

The first Gymnasium was opened in Russia in 1725 under a German Director. Thirty years afterwards a second was opened in Moscow, and a third at Kasan in 1758, but closed again in 1789. A commission, in 1826, recommended the introduction of both Latin and Greek, the latter being half-heartedly introduced, and in 1851 was taught in 45 out of the 74 Gymnasia then existing.

At the head of the Russian system is the *Minister*, and next to him the *Curator*, or Administrator of an Educational District, of which there are eleven in European Russia. The head of a Gymnasium is known as the *Director*, and of the Pro-Gymnasium as the *Inspector*, the terms being rendered in Russian almost exactly as spelt in English.

The Gymnasium is an eight-class school in which Latin is taken in the first class, and Greek in the third.

The Russian Realschool has its upper division divided into an ordinary and commercial section, the first four classes or lower division being common to both. In the ordinary division there are three upper classes, but in the commercial division only two.

In

In another type of Russian Realschool, there are six classes in the ordinary division and six also in the commercial division. None but modern languages are taken in the Realschool, and science figures more prominently in it than it does in the Gymnasium.

A reference to secondary education would hardly be complete without noting such a type of school as that of Industries and Manufacturies at Lodz. This is a sort of combination of Real and Technical school.

The Russian Schools of Commerce are also seven-class schools and are organised in the same way, that is to say, they are Real schools with commercial teaching.

To give a practical idea of the organisation of the work in a Russian school, the copy is given of the time-table for 1902-3 of the first Realschool of St. Petersburg.

It may be mentioned that the apparatus and general equipment for teaching Chemistry, Physics, Natural History, etc., seen by the Commissioners in Russia, were excellent. For fuller information reference should be made to Chap. XXVI.

14. *Secondary Education in Switzerland.*—The school-organisation of Switzerland varies considerably among the different cantons, which, in an educational sense, are independent of one another. Speaking generally, the Swiss system of Secondary Education includes schools which may be described as higher primary, as well as secondary schools proper. Thus, one finds schools locally known as "*écoles secondaires*," with courses ranging from one to six years.

Secondary schools are also very variously named in the different cantons, and even in any one canton. Thus middle schools, known as cantonal schools (*écoles cantonales*), have such subdivisions as the progymnasium and gymnasium (*progymnase et gymnase*). Then there are higher schools (*écoles supérieures*), lyceums (*lycées*). Again, other middle schools (*Mittelschulen*), are known as *Sekundarschulen*. Beside these there are *Gymnasien Realschulen, Lateinschulen, écoles régionales, Bezirksschulen, Scuole Maggiori*, etc. In 1900 there was a total of 549 of these various forms of secondary school in the whole of Switzerland.

In order that the Swiss Educational Organisation may be understood, an analysis has been made shewing the system of the different cantons [Chap. XXVII, secs. 3, 4, 5], and in order to give some idea of detail, special examples have been taken. A number of programmes are given, shewing also the division of the different grades in the schools [see secs. 22, 23, 24, 25, 27, 28, 29]. These programmes refer to the schools in Vaud, Neuchâtel, Lucerne, Zug, Basel, Appenzell Ext., and Schaffhouse, and are sufficient to illustrate the characteristics of Swiss secondary education.

A reference to the schools at Basel will perhaps be sufficient here. Entrance into the Lower Gymnasium, in which there are four classes, takes place at 10 years of age. Hence the Upper Gymnasium, also a school of four classes, is entered at 14. In the "*Realschule*" the entrance is at the same age, and there are also four classes, both in the *Lower Realschool* and in the *Upper Realschool*. In the latter, however, there is a *commercial section* in which there are but three classes.

While the Commissioners were travelling through Switzerland a proposal was made to constitute the Upper Realschule a five-class school, the last class being only a half-year in duration. Effect was probably given to the proposal. It may be mentioned that secondary education at Basel is free, not only for the Swiss themselves, but also for foreigners. The city has about 120,000 inhabitants, and is said to spend yearly about £120,000 on education, that is, about £1 per inhabitant. Such an expenditure is extraordinary for a dense population.

The schools of Switzerland are finely equipped in all respects. Owing to the independent spirit of the people, the educational-systems in the different cantons have not been uniformly organised, although there is an arrangement by means of which the great Federal Polytechnicum and University at Zurich may take account of qualifications obtained in the various Cantons.

The Chemical, Physical, Electrical, Mechanical, Mineralogical, Petrological and Natural History cabinets, in some of the better secondary schools of Switzerland, are very good, and a feature well worthy of reproduction here is the museum of pædagogy, to which reference has been made in the Interim Report [Chap. LI., secs. 1-13, pp. 452-6].

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The educational organisation in some of the Swiss cantons was outlined in the Interim Report [Chap. V., secs. 1-11, pp. 32-50]. The co-ordination scheme of Zurich was also sketched in that Report [Chap. LIV., sec. 2, pp. 469]. The co-ordination is very complete.

For further information Chapter XXVII. of this Report may be consulted.

15. *Secondary Education in Finland.*—Several schools were visited by the Commissioners in Finland. The *Normallyceum* of Helsingfors is an eight-class school in which Latin is taken in the 3rd class and Greek in the 5th, the latter subject however being an optional one.

The *Reallyceum* is also an eight-class school, in which modern languages take the place of Greek and Latin. A time-table has been translated to shew the details of the organisation, which is thorough.

Other curricula given are that of the Finnish Ladies' School in Helsingfors, and that of a continuation High School, in which pædagogic subjects are taken, for example, psychology (Sielutiedettä), Theory of Education (Kasvatus-oppia), etc.

The Teaching-staff in the Swedish lyceum consists of Professors (Oefverläraren), Lektorn (Lecturers), Kollegan Lektorn (Assistant Lecturers), Lärare (Teachers), Vikarierande lärare (Occasional Teachers). The equipments of the schools are excellent. For fuller information reference may be made to the Report [Chapter XXVIII, secs. 1-5].

16. *Secondary Education in Norway.*—Secondary education in Norway has been greatly developed during last century. In 1805 the central administration was charged with the direction both of schools and universities, the so-called *learned-schools* having as their express function the preparation of their alumni for the University. [Regulation of 1809.] In 1814 a "*Ministeriet*" for Ecclesiastical and Educational affairs was created. In 1839 a Royal Commission developed a plan for higher education accepted by the *Storthing* in 1845. The existing scheme is practically that established in June, 1869.

In 1885 there was a middle school (*middelskole*) of three classes identical for all, and three higher classes, of two divisions, viz., English and Latin. [Chapter XXVIII, sec. 7.]

The Gymnasium in the same year had two divisions, the Real and Latin, both Greek and Latin being taken in the latter, but neither in the former. [See sec. 8.]

In 1896 the secondary school was divided into the *Middelskole* and *Gymnasium*, the former having four classes (pupils 11 to 14 years of age) alike for all [sec. 9], and the latter three classes, but with three divisions, viz., "Real," "Language-history," and "Latin." Latin is taken only in the last.

The Department is assisted in Norway by a Council of Education (*Undervisningsraad*) consisting of seven experts in education. When questions of hygiene have to be determined, a hygienic specialist is admitted.

The head of a school is the *Rektor*, and the teachers are Professors (*Overlärare*), and masters or assistants (*Adjunkter*).

The schools seen by the Commissioners were fine buildings, and were well equipped.

For further details the Report may be consulted [Chap. XXVIII., secs. 6-14].

17. *Secondary Education in Sweden.*—The secondary schools of Sweden are State (*Allmänna Läroverk*), or private (*Enskilda Läroverk*), the earliest being the Cathedral and convent schools. The oldest Gymnasium is that at Vesterås, established by Johannes Rudbeckius in 1620.

In 1649 Komensky (Comenius) visited this country, and established a scheme in which there was a school of two grades, viz., the lesser college (*Trivialskolan*) and the Gymnasium (*Gymnasiet*). Each had a four-year course, as a general rule. This organisation lasted till the early part of last century, when the claims of the physical sciences began to make themselves felt and involved some changes.

In 1825–8, a Grand Council of Education proposed a reorganisation of education, and in 1849 the *trivialskolan* and *gymnasiet* were united in the *Läroverk* or Lyceum.

Among

Among educational advances regarded by Swedish authorities as important are *the abolition of Latin as an obligatory language* in secondary and higher education, the development of a modern side (*reallinie*), and *the transference of the baccalaureate from the universities to the secondary schools* in 1862.

Examples of the curricula of the Swedish schools are given in the Report [Chap. XXVIII., sec. 16], and also a time-table [sec. 17].

The school-buildings and their equipments in Stockholm are magnificent, and the teaching system is very thorough. For further information reference may be made to Chapter XXVIII.

18.—*Educational Advance in Japan.*—Owing to the urgent desire that necessary reforms in our educational system should be made with as little delay as possible, the Commissioners were unable to visit Japan. The Japanese system, however, has been studied as far as opportunity would permit. An account of recent educational advance therein is given in Chapter XXXI. of this Report.

Middle and secondary education is progressing rapidly, and the co-ordination of the general system is being greatly improved, particularly in the direction of securing uniformity between the education in the towns and in the country districts.

Increased facilities for the professional education and training of teachers have been made.

Industrial, Technical, and Commercial education have progressed. An indication of the importance Japan attaches to commercial training is the fact of an expenditure of £73,500 on the Higher School of Commerce of Tokyo alone. Commercial education is, however, not dealt with in this report.

For further detail as to Japan's educational activity reference may be made to Chapter XXXI.

19. *Secondary Education in America.*—An account of secondary education in America is given in Chapter VIII [by J. W. Turner], and will be later referred to in the Summary.[1] It will suffice here to observe that American belief in education is reflected in the organisation of both their primary and secondary education. Some of the schools seen by the Commissioners, both in the United States and in Canada, are finely organised and well-equipped.

Nationally, however, the organisation of education is imperfect, and, though individual schools may be excellent, the American education scheme is less complete, both as regards the co-ordination of education and the professional training of teachers, than is the organisation, say, of Germany. Great strides, however, are being made, and the higher seminaries for teachers in America are producing accomplished teachers; and it is also to be remembered that, not only is each State independent as regards its school system, but to some extent each community is so also.

20. *Secondary Education in New South Wales.*—In order to afford a basis for comparison, two Chapters in the Report have been devoted to giving an indication of the state of secondary education in New South Wales. One Chapter [IV, by G. H. Knibbs] gives the curricula of a few well-known schools, taken in alphabetical order; the other [V, by J. W. Turner] deals with the State High Schools. The latter, in a somewhat indefinite way, are co-ordinated with the State Schools (known locally as "Public Schools"). The former are, as regards each other, and as regards the State schools, *uncoordinated*, as will be obvious on referring to their curricula.

Chapter XXX in the Report is devoted to a discussion of what may be called the *general* reasons of the defects of our secondary education. Briefly, they may be said to arise from the absence of any organisation, as between school and school, and the absence of any adequate scheme by means of which the thorough professional training of the teaching staff may be assured.

The absence of co-ordination is evident on reviewing the arrangement of the classes, and on taking account of the fact that *there are no general curricula* to which each school is required to conform. One cannot help recognising also the absence

[1] This, by a mutual understanding, has been dealt with by Mr. J. W. Turner.

absence of any sufficient attempt to teach Science. Neither can it be claimed, as a set-off against this last deficiency, that the teaching of languages is, as a rule, conspicuously good [see Chap. III of the Report, and, in particular, secs. 14 and 15 therein], however excellent it may be in individual cases.

A condemnation of our secondary system, and of the results attained through it, must not be confounded with an indictment of the educational qualifications of secondary teachers. There is a degree of specialism throughout Europe which admits of the attainment of a proficiency impossible under our system. It is also to be remembered that the opportunity for good education, and intellectual stimulus, are far greater in Europe than with us. The fact is, that owing to the lack of organisation characteristic of our school-system, the secondary teacher of New South Wales has, *nolens volens*, to follow an educational process which he cannot but condemn, but which under his limitations he is absolutely powerless to remedy.

The reputation of secondary schools is partly, and often to a considerable extent, dependent upon the percentage of success with pupils sent to the University examinations. This leads to a concentration of attention upon a limited number of pupils and to a certain amount of "cramming." As to the educational demerits of this, it is unnecessary to say anything.

The fuller consideration of the limitations of secondary education in this State will be postponed for consideration in a later part of the Summary. *From the point of view of the efficiency of the work of the Public Instruction Department, it will be sufficient to mention the fact that it needs a number of secondary schools in order to professionally educate and train its teachers; and that, until these are created, the very serious criticism of its efficiency, which was the burden of the Interim Report, must remain unchallenged.*

V.

THE NECESSITY FOR SECONDARY EDUCATION.

[G. H. KNIBBS.]

1. *General Evidence of Necessity.*—The best general evidence of the need for secondary education is the fact that all countries provide it, and Chapters VI–XXVIII of this Report indicate something of the scale of the provision characteristic of the more advanced communities; while the abstract proposition that good secondary education should be available for those who desire to pass through it is one that would meet with no denial. Any falling short of what may be called its *practical acceptance* is virtually a denial of the necessity for such education.

2. *Is a State's neglect of Secondary Education of no moment?*—For a State to leave secondary education entirely to private enterprise, and to decline the responsibility of any effort to secure its efficiency through proper co-ordination under a general scheme, is practically either to assert that secondary education is of no public importance, or to affirm indifference in regard thereto.

Even if it be assumed that a State would be morally justified in relegating secondary education wholly to private enterprise, or that, for political reasons, it might be considered wise so to do, the fact remains that, once having undertaken primary public education, *proper provision ought at least to be made for the education of the primary teaching staff.*

3. *Efficiency of Primary System demands a Secondary System.*—It has been shewn in the Interim Report that a system which brings the primary teacher under the educational influences only of primary education tends necessarily to deterioration. [See Chaps. XXVII to XL, pp. 266–370, and, in particular, Chap. XXVIII, sec. 4, pp. 270–2, and Chap. XL, sec. 41.] *It is admitted by all educationists that the school for professionally educating and training the primary teacher must be a Secondary School,* and at the recent Educational Conference, convened by the Department of Public Instruction, the same principle was affirmed in the *unanimous recommendation proposing the abolition of the Pupil-Teacher System.*

4. *Advantage of a number of State Secondary Schools.*—Since, in order to make primary education efficient, the State must perforce create Secondary Schools in the larger centres of population, these might very appropriately be made foci for the development of a new educational ideal as to the organisation of education generally. To fulfil this function, they would not be restricted to those who propose to enter the teaching profession. The wider their scope the better. These State Secondary Schools could very well, at least during their early history, institute courses which, compared with one another, might be considered of equal academic value, like the secondary courses in Europe.

Constituted so as to admit general pupils, these schools would afford practical opportunities for children in various parts of the State to get the benefits of secondary education, the importance of which is that, in the direction of our industrial and commercial activity, there would tend to be an increase in efficiency.

With a well-organised *State Secondary System*, accredited to the community by its intrinsic merit, it would be found comparatively easy to induce secondary schools, established by private enterprise, to conform to a general régime, and in this way to bring about that degree of organisation through which alone our secondary system can be made to approach the excellence of secondary education in Europe or that of the finer examples of secondary education in America.

5. *State Secondary Schools Essential for Education of Primary Teachers.*—It has already been pointed out that the efficiency of primary instruction of the State necessitates the creation of State secondary schools [I, 18, and IV, 20].

In this connection it has to be remembered that the Department of Instruction requires a considerable annual supply of primary teachers, and at present it can make provision for the professional education and training of but very few of the total number.

It has been shewn also that the teaching of the untrained teacher can never compete with that of one who has received a proper professional education and has been systematically instructed in his art.

It has been shewn, further, that the primary teacher, in coming directly under the influence of a higher degree of education than he has at present under our system, and in coming also into personal contact with the teachers of secondary schools in which he acquires a secondary education, in reviewing the history of education from the earliest down to the present time, and studying its theory and philosophy, not only has had his stock of information greatly reinforced, but has also learned to look upon his daily task with a totally different eye. *It is the deeper consciousness of the significance of his work, and the larger mental horizon which the European and American systems confer, that so completely tranform the value of the educational effort of the teacher.*[1]

Instead of being a poor mechanical empiricist, working according to a set of more or less arbitrary rules, approved by authorities as mechanical as himself, he becomes an artist in unfolding the minds of the children under his charge, and in creating in them those ideals of industry and duty, without which a people can never be forceful or successful.

It ought to be repeated that, *unless we intend to remain satisfied with a system which, in comparison with the other educational systems of the world, merited the stern criticism of the Interim Report, we must have secondary schools for the training of the primary teaching-staff.*

However humble the beginning we make, it ought to be made at once, and if we decide to the contrary, it should at least be with a clear recognition that *we are deliberately electing to confirm our educational inferiority, while other nations, the wide-world over, are strenuously endeavouring to perfect their systems.*

6. *The Question of Expense.*—It is said in the Report for 1901-2 of the Japanese Department of Public Instruction, in referring to the question of expense, that "*the people generally have also begun to attach more and more importance to education, and instead of complaining about heavy burdens, they seem to contribute more willingly toward the funds for educational purposes.*"

It

[1]The Commissioner is aware that this sounds idealistic to those who are unfamiliar with the *tone* of educational effort in countries with better systems than ours. This is one of the saddest effects of our system.

It is this spirit that we need here, and we need also a deeper appreciation of the fact that—to use a phrase of Plato—there is a "wide-awakeness" about the properly educated child that there is not in the badly educated. It is this alertness upon which so much depends in the stern realities of life. And the conditions of life in this State afford ample opportunity for its exercise. Quickness to see one's financial, commercial, or industrial opportunity, to recognise how far scientific knowledge may be utilised in the exploitation of the resources of our country, to appreciate the combinations of conditions which will ensure success, and to act wisely on one's own initiative, involve something more than the "Three-R" type of education.

If we intend to stimulate primary production, and to enable our people to realise how absolutely essential earnest industrial enterprise is to our national existence, then *the teaching-staff in our primary schools must pass, as they do in other countries, through a very different type of preparation from the present one.*

We shall do well to remember the lesson taught the world by the establishment of the beet-sugar industry and the ruination of the Jamaica sugar-grower. The combined labours of the chemist, botanist, and agriculturist brought about an increase in the sugar-product of the beet of no less than 225 per cent., with the result mentioned, thus totally changing the economic conditions of the production of this commodity.

The above is sufficient illustration of the fact that *niggardliness in making primary education efficient may be the poorest of economy.*

In other parts of the world, where a criticism of education and its influence on the State is on a larger basis than here, the belief has arisen that *expenditure on education is more than repaid by increased power in the production of wealth,* and the tendency is everywhere in the direction of more liberal expenditure, both for primary education and for the higher forms of education necessary to the maintenance of its efficiency.

It is from the point of view of the power of education to influence beneficially the wisdom and assiduity of all industrial or other effort, that it may be recognised that even slight improvements therein may abundantly repay the educational outlay. One might mention improvement in agriculture as an illustration. If we are to emulate the example of other countries, we shall have to secure a better initial state of preparation through a better primary system for those of our citizens who propose to embark in this form of primary production. Only then can we hope that the fruits of technical education will be comparable to what they are in Belgium, Denmark, France, Germany, and other countries that are in earnest about education.

7. *Other reasons for Secondary Education.*—A good secondary education, in a suitable form, is necessary also for those who wish to prepare for their life-work more thoroughly than is possible in the primary school. Throughout the world wherever a State charges itself with the responsibility of secondary education, the fees are moderate; but where secondary education is almost wholly undertaken by private enterprise, the fees are prohibitive to many pupils, the value to the State of whose citizenship would be greatly enhanced by the more advanced form of education which they cannot afford.

A further reason that may be assigned for the State establishment of secondary education worthy to be compared with secondary education in Europe, or the better forms of secondary education in America, is that our University would then be able to render a higher service to the community. At the present time the state of preparation of the average student on entering the University leaves much to be desired, and valuable time is frittered away and opportunity wasted by the necessity of imparting elementary forms of knowledge which should have been acquired in the secondary school. *No one who has given the question the slightest thought will assume that the remedy lies in the University arbitrarily raising the standard of entrance.* What is needed, is the intermediary school, sufficiently equipped as regards the personnel of its teaching staff and as regards its scientific and other educational apparatus to properly discharge the functions of secondary education. The effect would be to raise the whole plane of educational effort, and so to reinforce the influence and

power

power of our people. To make our political ideals and acts wiser, our industrial aims and effort better assured and more remunerative, is the essential condition of the successful and permanent occupation of our land.

It ought to be added, that the review which the Commissioners were privileged to have of the educational systems of other countries, and of the connection of these with their national effort, has intensified, if it has not created, the recognition that a better system of education, thoroughly co-ordinated throughout, is a real need of our State.

VI.

LATIN AND GREEK IN RELATION TO SECONDARY EDUCATION.

[G. H. KNIBBS.]

1. *Prefatory Remarks.*—There are several questions which demand special consideration in connection with secondary education. Among these may be mentioned (*a*) the place which should be assigned to ancient and modern languages, (*b*) the importance of physical science, natural history, etc., (*c*) the scientific equipment of schools; and so on. We turn first to the consideration of the place assigned to ancient languages, and particularly to Latin.

2. *The unique position accorded to Latin in this State.*—The place that the study of the dead languages should have in Secondary Education is one intrinsically of considerable importance. Its importance is accentuated by the fact that our State University does not permit *regular* participation in its privileges (*i.e.*, attendance which ends in graduation) unless the student passes an examination in the *Latin* languages. *In view of the fact that almost over the whole world such a restriction has ceased to exist, it becomes incumbent to inquire whether we act wisely in continuing to assign to this, or to any other language,*[1] *so remarkable a preference.* That the disciplinary value of the study of Latin, as of any other language, is high is generally admitted. And it may further be noted that in no part of the world is there a failure to recognise that, for certain courses or careers, Latin and Greek are essential.[2]

3. *General Abandonment of the Preference accorded to Latin.*—If we except the Universities of Oxford and Cambridge, the Universities of Wales, and two or three of the American Universities, a decision has been reached practically throughout the world that modern languages should academically be on the same plane as the Greek and Latin languages. When one bears in mind that the London University, the Victorian University, with the Owens College of Manchester, the University College of Liverpool, and the Yorkshire College of Leeds, the University of Liverpool, of Birmingham, of Edinburgh, and of Glasgow, do not insist upon either Latin or Greek in some of their graduate courses, it seems obvious that one should submit a very cogent reason for *our* classic exclusiveness. Doubtless its true explanation is to be found in the influence which the traditions of Oxford and Cambridge exercise upon our University.

In Chapter III of the Report it has been shewn that *in countries where the Latin language is spoken and used with a facility to which we can make no pretence, so unique a claim for Latin has been abandoned, after the most mature consideration.* It should be remembered in this connection that the reputation as regards classical erudition of the countries which have abandoned this unique claim, viz., that the study of Latin shall be common to *all* forms of higher education, is of the highest character.

Before going further with this discussion, it should be stated that the reader who considers the matter of importance, should read Chapter III, already referred to, in which the whole question is discussed at far greater length than is possible in this summary.

4.

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[1] Excepting, of course, the mother-tongue.
[2] For example—Latin for Law; Greek for Theology, etc.

4. *Ancient and Modern Languages.*—In considering the place of a classic language, the fact that *modern languages cannot be ignored* must be kept in view; and also, that there is an obvious limit to the amount of linguistic study that may advantageously be attempted in school-life by the ordinary school-boy. *Modern languages are the repository of the ever-increasing accumulations of modern science and technology*; and no scientist nor technologist can hope to progress at a reasonable rate, or to keep touch with his subjects, unless he is acquainted with, at least, French and German, or preferably, French, German, and Italian. The same remark is true of such fields as those of literature and philosophy. The wealth of pure, of scientific, and of technological literature which is shut off from those who are unacquainted with modern languages can hardly be adequately realised by those who are not special readers in the fields indicated. It is this fact that has compelled *all* persons in all countries, who desire to maintain real touch with modern progress, to acquire some knowledge of modern languages. *It is, indeed, an elementary necessity of modern conditions of progress*, as was recently affirmed by Metchnikoff.

5. *Utility not in itself a sufficient criterion.*—Speaking of Greek in relation to general education, and in relation to foreign languages, the late Prince Bismarck is alleged to have said, "Russian is a better mental discipline, and is far more useful." That modern languages are more directly *useful* than Latin or Greek probably few would deny. *But immediate utility is not the only ground for a careful review of the whole question.* There is an abundance of testimony that the mental discipline involved in the study of Greek and Latin is *excellent;* so that, apart from the question of their literary and æsthetic value, these languages have also a utilitarian value. Thus Professor A. W. Hofmann, in an address in the *Aula* of the University of Berlin, on 15th October, 1880, said: "*All efforts to find a substitute for the classical languages, whether in mathematics, in the modern language, or in the natural sciences, have been hitherto unsuccessful;* after long and vain search, we must always come back finally to the result of centuries of experience,[1] that *the surest instrument that can be used in training the mind of youth is given us in the study of the languages, the literature, and the works of art of classical antiquity.*"

6. *Latin and Greek formerly studied for their direct utility.*—Since Professor Hofmann so expressed himself, the whole question has been thrashed out in Germany with characteristic thoroughness, and Hofmann's views, and others also, have not been overlooked in the controversy.

Professor A. Waldeck (Corbach) points out in an article on "Der Unterricht in Lateinischen" (Instruction in Latin), that until the eighteenth century was well advanced, Latin was really a living language for the Church and for science, while in diplomatic and similar circles French held the place of honour. *Latin was then learnt for practical reasons—as, indeed, it often is by pædagogues at the present time*—and, as Waldeck remarks, the time devoted to it could be defended on the ground of its *utility*. In reviewing the time given to the study of Latin, a just appreciation of its claims requires it to be remembered that its literature was the *source of information* for which one now would turn to the vernacular.

Similarly, Professor W. Lexis, of Göttingen, in discussing the adjustment of University studies in general, remarks that formerly—viz., in the "*Humanismus*" period—the ancient languages had a very definite and real significance, which they do not now possess. Latin was the language of the learned of all nations, and Greek was a mine of realistic knowledge in mathematics, natural science, and medicine.

On the other hand, Latinity has had not only advocates but opponents, and that even in Germany. The "*Latinitätsdressur*" (Latin drill) was strongly stigmatised by Johann Gottfried Herder as a poisoning of one's whole life, and the imitation of Latin as a hindrance to the mastery of one's mother-tongue.

7. *Ancient Languages not the only Path to Culture.*—The classical pedant, as is well known, is apt to assume that there is only *one* path to culture, viz., through Greek and Latin. It is now conceded by men of wide learning and broad sympathies that our inherited ideas as to the value of ancient languages need considerable readjustment. They are too restricted.

Speaking

[1] The use of the phrase, 'centuries of experience,' takes no account of the original *utilitarian* function of Latin, and that this has disappeared; to represent that it has been maintained for centuries as an intellectual discipline is to misstate the case.

Speaking at the great conference of 35,000 teachers in Boston in July last year, President Eliot, of Harvard, of whose eminence in the ranks of cultured and liberal-minded Americans it would be an impertinence to speak, said :—

"A cultivated man should express himself by tongue or pen with some accuracy and elegance; therefore, linguistic training has had great importance in the idea of cultivation. *The conditions of the educated world have, however, changed so profoundly since the revival of learning in Italy*, that our inherited ideas concerning training in language and literature have required large modifications. . . . The linguistic and literary element in cultivation abides, but has become vastly broader than formerly; so broad, indeed, that *selection among its various fields is forced upon every educated youth*. . . . Here is a profound modification of the idea of cultivation, which the nineteenth century has brought about. *What portion or portions of the infinite human store are most proper to the educated man?* The answer must be—Those which enable him, with his individual personal qualities, to deal best and sympathise best with Nature and with other human beings. . . . Courses of study should be fitted to the pupil, and not the pupil to the courses."

The essence of the matter is, that the spirit, which prompts the despising of modern literature, is unhealthy. The intrinsic wealth of that literature is such that it may be the path of culture just as truly as any ancient literature. And apart from the purely literary wealth of modern languages there remains the fact that they are the repository of scientific knowledge, which, if not possessed, leaves our education lop-sided.

It is evident that a judicial inquiry as to what should constitute the normal attitude to the question of the place of Latin and Greek in secondary education involves, on the one hand, a refusal to be governed by the traditions and instincts of those purely "practical" persons who can see no other aim in life than the accumulation of wealth, the development of physical comfort, or of material power. At the same time, it equally involves a refusal to be led by those who desire to form a cult based upon a knowledge of some particular language. The latter, either overtly or secretly, not uncommonly regard with disdain all persons who have not qualified themselves by learning the particular language adopted by themselves, and the former are blind to the existence of things of high moment to the human race.

The pedantry of mere scholasticism, on the one hand, and incapacity to recognise the higher function of linguistic studies on the other, are the Scylla and Charybdis to be avoided.

8. *Formation of a Classic Association.*—The formation of the Classical Association of England and Wales, in admitted alarm at the "real danger" of classical studies being "absolutely excluded from any part in the education of the country," is an evidence that the eminent men who constitute that association *most firmly believe in the value of classical studies.* It is, of course, true also that the temper of the Association, so far as could be judged from the report, is to allow no entrance to University careers without Greek and Latin, and *the implication of some of the speeches is that any concession which would permit of modern languages being substituted for ancient, would be followed by a complete abandonment of the latter.* This, however, betrays a lack of confidence in regard to allowing ancient languages to come into competition with other branches of human knowledge, and stultifies the situation, since it practically affirms that the study of the classic languages will not be maintained on its merits. The remedy for this danger is to have *better teaching*—teaching such as is advocated by Professor Postgate, of Cambridge, and such as is to be had in Germany and other parts of Europe. Formerly the method of learning was to *read, write,* and *speak* the language, so that some facility was obtained in its use, and the knowledge of it was *real.* What has been called the "*Neuhumanismus*" has brought about changes of opinion. The reading of Latin authors was because of their "Humanity" content; *they were the repository of what was necessary for general education.* But that is no longer true, and now they are read, if at all, for their disciplinary function, and for their aid in interpreting historic and linguistic facts as a whole.

9. *Modern Conditions.*—The necessity for a knowledge of modern languages, together with the fact of the enormous extension of science and technology, compels us to recognise that there has been a complete change of environment from the educational point of view. In no part of the world has the whole question been debated with the thoroughness that it has in Germany. Some reference to the reform in German education with a view of satisfying modern conditions will not, therefore, be out of place.

10. *The German attitude to the question of compulsory Latin.*—The recent educational history of Germany is important as regards the place of Latin as an obligatory or optional element in secondary education, and as to the question whether it should be a *sine qua non* for those who desire to enter a University, because German secondary education has been exceptionally thorough. If, also, one must take account of the influence of *prejudice*, it was certain to have been in favour of Latinity. It is also interesting to note that the existing state of things has been as much due to the direct and personal influence of the present Emperor, as the general system of Prussia was due to Frederick the Great and to Frederick William III.

The great Latin schools or "Gymnasien" of Germany originally took account mainly of the needs of theologians and jurists. Up to the middle of the 18th century, Latin was the language in which instruction was actually given. *The Latin city-schools and Gymnasia were intended only for the higher strata of society*, while the ordinary citizen required an education that took less account of mere classic erudition and more account of the urgent necessities of his life. And even the higher citizens and nobility found the Gymnasia little suited to their requirements, and hence the "*Realschulen*," the "*Ritterakademieen*," and the "*Pädagogien*," came into existence during the last century. *The consciousness has intensified that the Gymnasium of Germany had failed to meet the wants of important classes of the community, and had failed also to reflect in its curriculum the immense accessions of knowledge which have come in the fields of science and technology.* The course in the "*Gymnasien*" was so arranged as to constitute it solely a preparation for the University. The general need of the middle and upper classes, and the necessity of taking account of the progress of technical knowledge, had not manifested themselves.

After a long review of the whole question [Chap. III, sec. 6] it was decided that there should be a *uniform preparatory course* without Latin, and that the higher course should be three-fold, being divided as regards languages as follows:—

Gymnasium.	Real-gymnasium.	Oberrealschule.
Greek–Latin.	Latin—modern.	Two modern languages.

In order to make this triple division of practical avail it was necessary to give each branch the same academic value.

In December, 1890, a conference took place, the Emperor of Germany directly participating therein. In his opening speech, the fundamental idea expressed was that *the school had lost the necessary touch with real life, and must again acquire it.*

To understand the force of the German Emperor's remarks, it is necessary to recollect the intense prejudice in favour of Latin and Greek of the men trained in the *Gymnasien*. These men, too, held all the higher positions. A man unacquainted with Greek and Latin was, in their view, an *uneducated* man; and it must be admitted that the views of the German classic, who is nothing more than a classic, are not very dissimilar to those of many others in other countries. Such views are widely endorsed to-day, perhaps, most strongly by those who have no serious acquaintance with other branches of knowledge. The German Emperor did not believe that this spirit was healthy, nor did he believe that it conduced to the national well-being. That the schools had taken no sufficient account in their curricula of the tremendous changes that science had produced in the modern world was obvious; and it was, he thought, clearly an error. *Classical men could find no reason for reducing the time devoted to Greek and Latin.* The Kaiser took up a decided position, and threw the weight of his personal influence on the side of those who recognised that the *ability to*

to read Greek and Latin could no longer be regarded as the unique path to culture; that in respect of Latin *it was not now the only vehicle of learning.* In his speech the Emperor said :—

"*We must take the mother-tongue as the basis for the Gymnasium.* ("Wer müssen als Grundlage für das Gymnasium das Deutsche nehmen.") And again, "*The vernacular element must be the centre about which all else revolves.*" ("Der deutsche Aufsatz muss der Mittlepunkt sein, um den sich alles dreht.")

The result of the conference was that there are now established secondary schools with a course that is without either Greek or Latin till the pupils are 12 years of age, but what is still more important is that Greek and Latin are now without special academical privileges.

11. *Attitude of other countries.*—France has conceded the privilege of taking any two languages besides the mother-tongue. Free options are characteristic of America. Greek and Latin are being better taught [see Interim Report, Chap. XXII, secs. 1–22, pp. 197–211], and as a result are being taken by larger numbers of students though they are optional. The attitude of almost the whole of Europe is a refusal to give Latin, much less Greek, a unique place in the educational curriculum.

The comparative condition of the teaching of Latin and Greek in Germany and New South Wales is referred to in Chap. III, secs. 13–15, of this Report.

12. *General Result as to Languages.*—The general result may be thus stated :—

Those countries which have made the most extensive and important contributions to classical research, and among whose citizens are to be found the largest proportion of persons able to speak and write Greek and Latin freely, have abandoned insistence upon them as obligatory subjects in all branches of higher education, and have allowed modern languages to be substituted in lieu thereof in certain cases.

This option, where so desired, of substituting modern languages for ancient, is practically world-wide.

There is an increasing recognition of the *cultural value of modern literature.*

Attention is called to the conclusions in Chap. III, sec. 19, and it may be repeated that any reader interested in the classic question will find material for reflection in the chapter mentioned.

The Commissioner would commend the following passage from Dr. Haldane to those who, believing the ways of Oxford and Cambridge are counsels of perfection, *propose to keep the doors of the State University shut against the non-Latin student.* Dr. Haldane says :—

"The Germans have shewn us how the University can fulfil a double function "without slackening the effort after culture. . . . . For breadth and under- "standing, who will dare place the record of the work done in Oxford and Cambridge "in the department of classical literature *above* what has been turned out in "Germany? Take the editing, and with it the criticism, of Greek philosophy [*i.e.*, "in Germany], and compare it with the shallow formalism which did duty in the "English Universities up to about thirty years ago, when German ideas began to "penetrate with the work of German scholars."

With every attempt to promote the study of Latin, Greek, or any other ancient language that is the repository of literary treasures, every *liberal* educationist must be in sympathy; but, at the same time, *the very liberalism which accords this sympathy must also oppose the refusal to accord the privileges of the University to those who prefer to receive their culture through modern languages.*

VII.

THE TEACHING OF SCIENCE AND SCIENTIFIC EQUIPMENT.

[G. H. KNIBBS.]

1. *Science from the Standpoint of Liberal Education.*—The teaching of Mathematics, the Queen of the Sciences as it has been called, has been accepted as having sufficient cultural merit to be admitted to the curriculum of a liberal education, even by those whose preference for ancient languages and literature is decided.

When, however, it is remembered that such acceptance is sometimes more good-natured than sincerely cordial, it is natural that *science in general* should be viewed by a certain class rather in the light of matter of a utilitarian character, than as contributory to the higher forms of education. It is proper, therefore, to observe that throughout the world the cultural value of the teaching of science is to-day better understood, and more heartily acknowledged now, than it was, say, even two decades ago. Though the need for such a protest as Huxley's[1] against the illiberalism of too narrow a view of what might be regarded as constituting *education worthy to be called liberal* still exists, it is now less urgent.

Professor Huxley, in his address on "Universities, Actual and Ideal," said: "It is only fair to the Scottish Universities to point out that they have long understood the value of *Science as a branch of general education;*" and he speaks approvingly of the requirement that Mathematics, Natural Philosophy, and Natural History, as well as Mental and Moral Philosophy, should be taken in addition to the Latin and Greek course. At the present time, neither Latin nor Greek is compulsory at Edinburgh or Glasgow.

The principle to be followed may be thus stated: *Liberal education* cannot ignore the great movements that are taking place in the world, owing to enormous accessions of knowledge in the domain of natural phænomena. It is by means of these accessions that man has increased his control of the energies and general resources of Nature, and in this way advanced his self-expression to a higher plane. The problem of man, in relation to his environment and to his civic, political, and national evolution and aspirations, demands a real, even if limited, knowledge of general science; *and the day has gone by when those who restrict themselves to ancient literature and history can be regarded as normally or liberally educated.*

2. *Science from the Standpoint of Utility.*—The characteristic way in which Science is entering into the ordinary activities of man, depends upon the fact that, through its aid, he is able to achieve what otherwise would be impossible. *To fully profit by the benefits it has to confer, an appreciation of its value must become traditional and instinctive.* This state of things can be created only by commencing in the elementary and primary schools.

If, for a moment, we contemplate the alertness in availing itself of scientific aids which would characterise a community that had received such a scientific education in a primary school as was recommended by the Commissioners in the Interim Report on Primary Education, we should recognise that the increased efficiency of that community in primary production would doubtless be considerable.

In this State we have Agricultural and so-called Technical Colleges; but to adequately profit by what either has to offer, it is necessary that the scientific teaching of the primary school should be of that character which would properly prepare the pupils for their subsequent work. This, the Report pointed out, was necessary. The more advanced teaching of science in connection with Secondary Education would have a double, or even a triple, function. For those who pass through secondary education as a qualification for practical life, it would mean greater power of availment of what science has to confer, and more rational ideas as to the importance of scientific knowledge.

For

[1] "*Science and Culture,*" by T. H. Huxley, LL.D., F.R.S., London, Macmillan, 1882.

For those who pass through the Secondary School in their professional training as primary teachers, it would mean greater teaching power and greater influence in creating an atmosphere of appreciation of the benefits which science may confer.

For those to whom Secondary Education is a preparation for higher professional or general education, it means that their professional or general studies commence on a higher level, and that they will benefit accordingly.

3. *Science Teaching in New South Wales.*—To say that the secondary schools of New South Wales seriously neglect scientific teaching would be somewhat misleading; nevertheless it is a fact that the teaching is of very little value as compared with the teaching in Europe. If one, familiar only with our secondary schools, were to walk through a French Lycée or a German Realgymnasium, he would at once be struck with the scale of the provision made for the teaching of Botany, Zoology, Chemistry, Physics, Geology, Cosmography, and similar sciences. The contrast between the secondary schools of this State and those of Europe would strike him as impressive. [See Chap. XXIX of this Report. Reference may also be made to the Interim Report, Chap. LI, secs. 1-13, pp. 452-6.] Many a *primary* school in Europe is incomparably better fitted for the teaching of Science than any *secondary* school in New South Wales. By contrasting both the curricula and the scientific equipment of the secondary schools of Europe and of this State, anyone may readily be convinced that science is not taught here as it is in Europe. Nor are the qualifications of the teachers here equal—not because they are not intellectually on the same plane, but because our school system does not give them an equivalent opportunity for specialism, or provide them with so excellent a training. [See Chaps. XXI, XXII.]

4. *The teaching of Science in European Secondary Schools.*—The two ways of judging the reality of scientific teaching, as just indicated, are to observe the equipment and the curriculum. With a view of annihilating scepticism about the matter, the Commissioner has translated the details of the curricula of the lyceums and colleges of France [Chap. XVII, secs. 4–15].

In connection with the teaching of science, as with other subjects, the immense importance of *thoroughness* cannot be too strongly insisted upon. This is to be secured only by the proper education and professional training of the teacher. Thoroughness will not only ensure *respect* for science, it will also tend to obtain for us those advantages in commerce and industry, and, indeed, in all the various walks of life, which directly depend upon sound scientific knowledge. When, however, unqualified teachers are allowed to teach science,—when persons who possess only the merest text-book knowledge of scientific subjects are permitted to be authorised teachers, then not only is the subject-matter liable to be brought into contempt, but also a general opinion that science is incapable of rendering signal service is likely to arise. This often expresses itself in a belief that the so-called *practical* man is worthy of confidence. It is from this point of view that one sees how important is the excellence which is possible only through thorough qualification for teaching.

The teaching of science demands equipments, apparatus and laboratories. The teacher is greatly handicapped without them. In Europe, not only have professors and teachers all the advantages that well-equipped laboratories can afford, they not unfrequently are themselves eminent in the realm of scientific research, and thus maintain touch with its most recent developments.

5. *Qualification to teach Science in Europe.*—That the secondary school teachers of Europe are competent to ably discharge their duties will be seen by referring to such Chapters of the Report as XV [on the Professional Education of the teaching-staff for Secondary Education in France, secs. 1–7] and Chapters XXI, XXII [on the Educational Qualifications and Practical Training of the Secondary Teachers of Germany, secs. 1–29; secs. 1–7].

That they have the *opportunity* to teach, is evident from the fact that the scientific apparatus in the secondary schools is not only very complete, it is also *specially adapted for the purpose of instruction.* Many factories make apparatus for schools, and the warehouses for the supply of such material (Lehrmittelsanstalten) are institutions of considerable magnitude.

The German teacher is always a specialist in his subject, or group of subjects, and he is widely educated before specialism is commenced. 6.

6. *Actual Scientific Equipment in European Schools.*—The complete equipment of a secondary school is constituted, approximately, as follows hereafter, viz.:—

For general culture, mother-tongue, ancient and modern languages, text-books on various subjects.	(1) General Library. (2) Teachers' Library. (3) Pupils' Library.

Sometimes (1) and (2) are combined, and generally the resources of (1) are available, with some limitations, for (3).

For Botany and Zoology and Natural History generally.	(1) Charts and diagrams. (2) Models. (3) Stuffed animals. (4) Collections of insecta. (5) Dissected animals. (6) Microscopic preparations.

For Natural Philosophy, Mathematical and Physical Sciences.	Mathematics	Apparatus. Models.
	Physics	Apparatus. Diagrams. Laboratory.
	Chemistry	Apparatus. Chemicals, Reagents. Laboratory.
	Geology	Charts. Collections of Rocks and Fossils.
	Mineralogy	Crystallographic models. Collections of Minerals.
	Cosmography	Diagrams. Tellurium, etc. Apparatus.

For a fuller conception reference should be made to Chapter XXIX. [See also Chap. LI, Interim Report.]

7. *The Magnitude of the Equipments in Europe.*—In order to convey something like a realistic opinion as to the magnitude of library and scientific equipments to be found in European Secondary Schools, some details are supplied. In Chapter XXIX [sec. 7] an indication of the works announced as purchased for the teachers' library in the Kaiser Friedrichschule of Charlottenburg, 1901–2, is given, and also those purchased for the Students' Library [in sec. 8]. The equipment obtained for Natural History is shown [in sec. 9], for the Physics' Cabinet [in sec. 10], for the Chemical Laboratory [in sec. 11], the Geographical and similar equipment [in sec. 12], and for other subjects [in secs. 13 and 14]. Reference should be made to this chapter by the reader who wishes to ascertain the thoroughness and to know something of the character of European Secondary Education. Another illustration is taken from a different Gymnasium [see secs. 15–16], and a brief reference is made to some Literature on the equipment of the German Gymnasium [sec. 17].

The following statistics, having reference to the equipments of Hungarian Secondary Schools, will also assist the reader to recognise their magnitude.

The collections of the secondary schools, excluding books, of course, and the paraphernalia of libraries, include it is said about 2,505,000 objects, made up as follows :—

Collections of Natural History	1,708,000 objects.
Physical apparatus	77,000 pieces.
Chemical apparatus	83,000 ,,
Collections connected with geography, history, and philology	375,000 ,,
Drawing	217,000 ,,
Gymnastics, etc.	45,000 ,,

The fact that this is for 194 secondary schools will give some idea of the wealth of the equipment. *There are schools in Hungary where the number of specimens in the natural history collections totals* 60,000, *and the collections of minerals, etc., are exceptionally fine.* The mountainous regions and mines contribute largely to the latter.

The

The philological and historical collections are more recent. Literature and history are taught with their aid; and in reading the classics, illustrations of ancient art, etc., are largely used. Maps, prints, photographs, plaster, and terra-cotta casts, reliefs, etc., are all pressed into service, and *by ministerial decree this equipment has to be yearly increased.*

The libraries of the Hungarian schools are well worth mentioning. The following list will give some idea of their wealth in books:—

Reformed College of Debreczen ...	...	68,000 volumes.
,, ,, ,, Sarospatak ...	...	52,000 ,,
Evangelical Lyceum of Pozsony ...	...	39,000 ,,
,, ,, ,, Késmárk ...	...	36,000 ,,
,, ,, ,, Brassó ...	...	27,000 ,,
Higher Unitarian School of Kolozsvár	...	26,000 ,,
Reformed College of Nagy-Enyd	...	25,000 ,,
Evangelical Lyceum of Eperjes	...	24,000 ,,
Catholic Gymnasium of Arad ...	...	18,000 ,,
,, ,, ,, Nagy-Szombat ...		16,000 ,,

While the more recently founded Gymnasia, Real-schools, etc., are less rich, they contain all the more important recent works. In the whole of the secondary schools there are—1,220,000 scientific works; 139,000 volumes of reviews; 409,000 miscellaneous; total, 1,768,000.

In every secondary school in Hungary there is a library for the use of pupils. In these are the classic text-books and manuals *for the use of the poorer pupils.* The body of their libraries is made up of literary and scientific works, the masterpieces of the great authors, both national and foreign, narratives, travels, popular books, etc.

8. *Qualifications of the Science-Teacher of Europe.*—The principle recognised in the qualification of the continental secondary teacher is that he must not only know his subject, he must also have sufficient education to assure *breadth of mental horizon.* He must be a specialist in his subject. Wherever teachers are expected to teach all sorts of subjects, as, for example, ancient and modern languages, mathematics, natural history, and physical science, the result will be necessarily indifferent. Subjects taught by specialists who have first received a broad general education are certain to be handled, not only more *thoroughly*, but also more *interestingly*. This is the fundamental view of the German authorities.

Each teacher in Germany is required to pass a *general examination* in Philosophy, Pædagogy, German Literature, and for candidates who belong to the Christian Church, in the Theology of his Church. He is required also to pass what may be called a *subject-examination*, the nature of which is dependent upon his own choice. In Science, for example, he might take pure mathematics, or applied mathematics, or physics, or chemistry and mineralogy, or botany and zoology, etc. It is worthy of mention also that the European courses include in many countries Philosophical Propædeutics. The teacher of this must have a general knowledge of philosophy and its history, and a detailed knowledge of one of the more important philosophical systems. The following brief indication of what is required of the Science teachers will be sufficient to give a general idea:—

Qualification to teach pure Mathematics.—For the *lower grade* an accurate knowledge of elementary mathematics, including analytical plane geometry, the principal properties of the conic sections, and the fundamental elements of the differential and integral calculus, are required.

For the *higher grade* is demanded, further, such an acquaintance with the theory of higher geometry, higher arithmetic, and higher algebra, higher analysis and analytical mechanics, that the candidate shall be able to work out ordinary problems within this field without assistance.

Qualification for Applied Mathematics.—The preliminary qualification is defined in the preceding section. The other requirements are a knowledge of descriptive (or projective) geometry as far as the theory of central projection inclusive; facility in drawing; a knowledge of mathematical methods in technical mechanics, especially graphical statics; lower geodesy; the elements of higher geodesy; and the theory of correction of errors of observation.

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Qualification for the teaching of Physics.—For the *lower grade* a knowledge of the most important phænomena and laws for the whole range of this science, and of the founding of these on a mathematical basis, so far as this is possible without applying higher mathematics, and dexterity in the use of the necessary apparatus for physical demonstration in connection with school instruction, are required.

For the *higher grade* a knowledge of experimental physics and its applications; of fundamental researches in regard to the most important parts of theoretical physics; a general review of its entire field.

Qualification to teach Chemistry and Mineralogy.—The requirements for the *lower grade* are a knowledge of the following:—

The laws of chemical combinations; the most important theories concerning their constitution; the representation, properties, and inorganic combinations of the most important elements; their significance in the economy of nature, and their importance for chemical technology; facility in experimentation; the most important minerals in respect to their crystalline form; their chemical and physical properties; their practical value, and the part they play in mountain and geological formations, especially in Germany.

The additional knowledge required of teachers of the *higher grade* is of the following:—

Incisive knowledge of inorganic chemistry; the compounds in the province of organic chemistry, which are specially significant for physiology or technology; the most important chemical theories and methods; facility in qualitative, and sufficient practice in quantitative analysis, with inclusion of organic elementary analysis.

Qualification to teach Botany and Zoology.—The *lower grade* demands knowledge of the following:—

The commonest or most frequently occurring indigenous plants and animals, and the specially characteristic forms in foreign countries (all based upon direct observation); the anatomy and the fundamental elements of the physiology of the human body; with reference to hygiene (Gesundheitspflege); systematic synopsis of the vegetable and animal kingdoms; the most important natural families; some representatives of the lower plant world, as well as the most important orders of vertebrata and articulata; some representatives of the remaining part of the animal kingdom and the geographical distribution; the fundamental theory of the vegetable anatomy, physiology, and biology; a glance at the structure and life of animals; practice in drawing vegetable and animal forms.

For the *higher grade* the following are necessary in addition to the above:—

Thorough knowledge of the anatomy, physiology, and biology of plants and animals; systematic review of the vegetable and animal kingdoms; comprehensive knowledge of human anatomy and physiology.

[For more complete information, reference should be made to Chapter XXI, secs. 1–29.]

In addition to possessing the thorough educational qualifications above indicated, the German Secondary teacher has to pass through an equally thorough scheme of *practical training*. This involves two years, one known as the Seminarial, and the other as the Probationary year. During the first, he observes the teaching and familiarises himself with school-organisation; he studies the theory of education and instruction, and discusses with his fellow seminarists matters of general professional interest. In the Probationary year, he is entrusted with eight or ten hours teaching weekly, and may even be allowed to teach twenty hours

hours weekly under special circumstances and with special remuneration. During his course he familiarises himself with the use of the apparatus with which he illustrates his teaching, makes experiments, etc. This scheme has the advantage that he becomes familiar with the methods of well-trained and well educated teachers.

For a fuller idea of the details of the practical training, reference should be made to the Report [in particular to Chap. XX, secs. 1–7].

What has been said will go far to explain why the German Secondary School is so superior when compared with our own.

VIII.

DEFECTS OF SECONDARY EDUCATION IN NEW SOUTH WALES.

[G. H. KNIBBS.]

1. *Standards of Comparison.*—In countries which have failed to reduce their education to some sort of system, general comparisons can be instituted only with great difficulty. They are, in fact, practically impossible. The enormous advantage which an organised scheme possesses, as compared with uncoordinated education, depends to a great extent upon the fact that not only can each subject be discussed *per se*, its relation with the curriculum as a whole can also come under effective review, and improvement is thus facilitated.

In endeavouring to analyse secondary education in this State, and to compare it with that of other lands, the real basis of comparison must initially be—

(a) The character of the teaching in individual subjects;
(b) Secondly, one must take account of the inclusion or omission of subjects in the curriculum;
(c) Thirdly, of the thoroughness or otherwise of their coordination;
(d) Fourthly, of the efficiency or inefficiency of the various necessary divisions of the whole range of secondary education;
(e) And, finally, of its place in the entire educational field, or what may be called its effectiveness as an integral part of public education.

Though by no means exhaustive, this is a sufficient ground of comparison.

Unfortunately the fourth consideration (d) must be somewhat indefinite on account of lack of organisation. Turning, however, to the various questions in the above order, we consider first (a), viz., the teaching in individual subjects.

2. *Teaching of Individual Subjects.*—The thorough organisation of education over the greater part of Europe admits of *a high degree of specialism* in teaching, analogous to that of universities. *Provided that the teacher has previously had a liberal education, so as to confer breadth of view, it is an immense gain when he is able to focus his whole professional attention upon a limited field.* This confers a thoroughness and power not otherwise attainable, so that, other things being equal, an educational organisation which secures this has great advantages. On comparing conditions it is easy to see that the European teacher is able to discharge his professional functions in a more thorough manner than the teacher of this State.

Individual cases to the contrary do not impugn this dictum: the *general* case is that too many subjects are required to be taught by the one master. In order to bring the specialism of continental teaching into strong relief the matter has frequently been referred to in the report, as a reference to the following passages will shew:—

Austria	...Chap.	IX.	secs. 4–6	Saxony	...Chap.	XXI.	sec. 27
Hungary	... „	X.	sec. 22	Baden	... „	XXI.	„ 28
Belgium	... „	XI.	secs. 3–4	Germany	... „	XXII.	secs. 1–7
France	... „	XIV.	sec. 15	Greece	... „	XXIII.	„ 3–4
„	... „	XV.	secs. 2–6	Holland	... „	XXIV.	„ 5–6,18
Prussia	... „	XXI.	„ 3–18, 22–25	Italy	... „	XXV.	sec. 11
				Russia	... „	XXVI.	„ 7
Bavaria	... „	XXI.	sec. 26	Switzerland	... „	XXX.	„ 30

3. *Limited time spent in teaching.*—The limitation of the amount of teaching required daily of the secondary teacher has also an importance not adequately appreciated in this State. In a University, the actual time spent by each member of the staff in actual teaching (lecturing) is always very small. The balance is occupied in reading special subjects and in research or scientific investigation, and also in keeping necessary touch with the general development of knowledge, since any sane teacher will endeavour to maintain breadth of view.

As the grade of teaching advances, this limitation becomes increasingly important; *the ratio of time spent in actual teaching to that spent in study and research becomes smaller and smaller as the standard of teaching advances*, and experience shews that this alone is compatible with excellence. The intellectual demand, on the other hand, becomes increasingly severe as the grade progresses.

In a satisfactory educational system there must therefore, in passing from the lower to the higher grades of instruction, be a continual diminution in the hours spent by individual teachers in actual teaching.

Secondary education in Europe—and America also—is so organised as to conform to this requirement, and on referring to the various chapters of the Report, it will be found that the actual number of hours of teaching are less for the staff of the secondary than for those of the primary school, and also less for the higher division of the secondary than for its lower division. The *directors* are occupied least of all in actual teaching.

The time-table for the 2nd Higher Burgher School at Amsterdam will illustrate the details of the occupation of the teaching staff. It should be noticed that it is totally different from our State system [Chap. XXIV. sec. 13].

Take at random any subject, geography for example. The following is the occupation of its teacher, Hagedoorn, in the school to which reference is made :—

Monday—10; 11; 2.20. Tuesday—9; 10; 11; 1.30. Wednesday—9; 10.40; 11.30. Thursday—9; 10. Friday—9; 10; 11; 2.20; 3.10. Saturday—9.

The teacher of Natural History is Heinsius : his occupation is—

Monday—9; 10; 11. Tuesday—9; 10; 1 30; 3.10. Wednesday—9; 9.50; 10.40; 11.30. Thursday—9; 10. Friday—1.30; 2.20; 3.10. Saturday—9.50; 10.40.

Some of the lessons are 1 hour and some only 50 minutes in this institution, *i.e.*, *nominally*, actually they are less than this.

The practice of teaching for a limited number of hours is characteristic of Europe. For another example see the Russian system. [Chap. XXVI, sec. 7.]

Excellence in the character of the teaching in Europe is assured by the high degree of special knowledge which the régime of limiting the actual number of hours teaching makes possible, and by the tradition that the teacher's knowledge of the subjects he professes must be very thorough.

That the state of the organisation of secondary education in New South Wales does not conform in the same degree to these traditions, and does not afford the secondary teacher the same opportunity for thoroughness, is a serious defect therein.

In the Yearly Reports of continental schools, printed for public information, there are very frequently added, as appendices, original papers by the directors or teachers, *i.e.*, papers containing the results of original researches or discoveries in the fields of literature or science. So that European teachers are workers in the advancement of knowledge, and are not merely well-informed teachers of what has already been acquired by others' genius or assiduity. *This increases their personal influence and power of stimulating their students.*

4. *The Status of the Secondary Teacher.*—The status of the secondary teacher is much better defined in Europe than with us. This depends partly upon his title,[1] but more upon public recognition of the importance of his office.

Throughout Europe the secondary system ends for those who pass the final examination either in a *baccalaureate*, or in a *certificate of maturity*, which is practically the same thing. By those who know anything of it, it is admitted that the

[1] He is, for example, legally a "Professor" when he has attained a certain grade in German secondary education.

the *Arbiturienten Examen* of Austria, Germany, etc., is much more severe than the matriculation examination, the passing of which is necessary in order to regularly enter upon the courses of an English University.

The fact that the secondary teacher of Europe is charged with a responsible duty of this kind testifies to his status.

5. *Importance of the Status of Secondary Teachers.*—A traditional appreciation of education depends very largely upon the attitude of mind of the pupil, during the formative period of his career, toward his master or professor. The thoroughness of a highly educated and highly trained teaching-staff is not only a factor of immediate value in furnishing good education, it also creates a high public ideal of what is implied therein. That is exactly where *the situation is unfavourable for us while the state of educational organisation remains as it is.*

The indirect consequence of a favourable change of public appreciation of the work of the secondary teacher would be very great, but it involves, of course, an actual improvement in his educational and general status: he must at least be given as excellent an opportunity as his European confrere.

6. *The Curricula of Secondary Schools.*—Mere school-programmes do not in themselves furnish very definite information as to the character of teaching. Latin, for example, taught by a man who can express himself *extempore* in the language, whose diction is excellent, who has a commanding knowledge of ancient history and the literature of the language, is a very different thing from Latin taught by one who has to use crib, dictionary, and grammar. Similar observations hold good for other subjects. In comparing the European curricula with our own, it is not sufficient therefore to merely observe whether the same subjects are taught or not; it is necessary to take account also of the efficiency of the teaching.

The evidence in Chap. III, as to the teaching of classic languages, is that it cannot compare with the teaching, say, in Germany [Chap. III, last paragraph, sec. 9; see also secs. 3–13–17].

The difference in the teaching of languages generally, and particularly in the teaching of modern languages, has been sufficiently dealt with in the Interim Report. [See Chap. XXII, secs. 1-22, pp. 197-211.]

That similarly, the teaching of science cannot compare with that of Europe is evident from the fact that not only are our science teachers less eminently qualified—since they are not given the opportunity to specialise—they have also no adequate equipment for the purpose in view.

One conspicuous feature of difference between the Continental and our curricula, is the introduction in the former of what is known in Germany and Austria as "*Philosophische Propædeutik.*" The great value of this is that it tends to unify the conceptions of the various sciences, so as to make them form part of a general system of thought. The grasp of the continental student as to the significance of the fundamental scientific conceptions is increased, and his general mental outlook is greatly enlarged thereby. Teaching of the same character is greatly needed by those who attend the science and professional courses in our University, and it is a distinct advantage to have received it during the career in the secondary school.

7. *Coordination of the Curricula.*—A review of the continental systems can lead to but one opinion, and that is that perfectly definite educational paths in secondary education are alone consistent with thorough education, and the three-fold path of the German and other systems has many advantages. In the German system the defects, if any, are the weakness of the science portion of the curriculum in the Gymnasium, and the want of liberality in not allowing the student to take any two languages whatever, as in France.

Looking carefully into the question, "which, among the existing forms of secondary education, may be regarded as the most general?," it will be seen that we may take the "*Realgymnasium*" practically as model, and in Chapter II, sec. 10 of

[1] Lectures have been recently given in the University of Sydney by Professor Francis Anderson for certain professional students of the same object in view.

of this Report, it is suggested that Science, Latin and one modern language, together of course with the mother-tongue, should be regarded as the *normal* form of secondary education, and the other forms as variants.

The principle underlying the decision as to curriculum, is that *the place of pre-eminence should be accorded to our own language*, the second place to science, and the third to other languages, ancient or modern. That will produce what may be called literary balance, and it assigns the mother-tongue its proper place in our educational esteem.

A sufficient indication of coordination has been given in an earlier part of the Summary.

Touching the question of curricula it would be difficult to suggest one which might be fairly regarded as a decided improvement on the general idea of the reform curriculum of Germany, by means of which the subjects are the same for all classes up to 12 years of age, the division then being into three branches. The reader interested in the question should consult Chap. XIX, secs. 1–18.

The hours per week, from 30 to 32 for the higher classes in Germany, are perhaps long. In view of the climate of this territory the lessons instead of being hour lessons might be somewhat shortened, and the time-table brought within reasonable compass in that way.

8. *Inefficiency of Secondary Education in New South Wales.*—Whether we look upon secondary education as a preparation for higher education, or as the last stage of preparation for some career or calling in life, the result, on making a comparison of what is available in this State with what is available in Europe, is the same, viz., that *with us education is inferior*. The lengthy Report, hereinafter, will fail in its object, if it does not impress this fact on the mind of anyone who has sufficient interest in the great question of public education to investigate the whole matter. It must suffice here to say that in the judgment of the Commissioner our Secondary System is by comparison humiliatingly imperfect, and that this imperfection has a serious reaction on the practical affairs of life, as already pointed out.

As a preparation for any career whatever, it is defective, because in respect of a knowledge of either ancient or modern literature or of science, the school-pupil in our State does not leave his school as well-equipped as the student of the secondary schools of Europe, or of those of many States in America.

As already mentioned, the secondary school is an important factor in the efficiency of primary instruction. Hence from the standpoint of public education, the absence of a secondary system comparable to that of Europe must be regarded as a grave defect, and one which it is incumbent upon us to make good at the earliest opportunity.

9. *Tendency to Absence of Thoroughness.*—Under the present system of the State, the standard of secondary education is in some measure decided by the view taken by the University authorities as to what should be required of those admitted to its regular courses. Through the Junior and Senior Public Examinations and the Matriculation Examination, the University gives, in a somewhat *indefinite* way, an indication of its view, and public information as to this is afforded by the annual publication of the small manual concerning these examinations.

In the absence of the organisation of secondary education in this State, this virtual appraisement by the University of the quality of the work done in the various schools is unavoidable. Being absolutely disinterested, and being also an authority on higher educational matters, it is but natural that the various schools should recognise the decisions of the University as carrying greater weight than those of any other available authority.

This condition of things cannot be regarded as satisfactory by either side. No intelligent critic of the work done in the University will fail to recognise that it is limited and hampered by the imperfections of the secondary education of the State. Nevertheless, *no arbitrary decision to raise the standard of the examinations has the character of a true remedy*. It will tend under the existing state of things rather to accentuate an evil already deplorable, viz., the practice of "cramming." This may be defined as the art of satisfying examiners by an endeavour to focus attention on the probable range of the examination rather than to become generally proficient in the subject of examination. The point is worth attention.

10. *Advantage of Examination by Teaching-Staff.*—The appraisement of educational progress through examinations held by an outside authority is, at best, always an unsatisfactory proceeding. If this is not immediately obvious it will become so by considering a régime in which the professional qualification of the teacher is invariably assured, and in which the instructor of the pupil or student is himself the appraiser of the success or otherwise of the pupil.

In a University, the professional staff must necessarily be the examiners; to go beyond them would imply a doubt as to their competency. Unless grave mistakes are made in their appointments—in which case an outside examination would be no remedy—they must be regarded as the proper persons to judge as to the efficiency of those studying under them. In the same way *under an educational system with definite curricula, and guaranteeing satisfactory qualification of the secondary teachers, there would be no reason whatever for hesitating to charge them with the responsibility of holding the final examinations,* and of deciding whether a pupil had qualified himself to proceed to higher studies.

Given therefore, uniform organisation as to curricula, it would be for the secondary school to say whether the pupil was qualified to enter as a regular student into the University; not for the University.

The point is so important as to demand special attention.

11. *The Evil of "Cramming."* Secondary schools in New South Wales are under the temptation of endeavouring to appear well in public estimation through the percentage of passes they obtain in the pupils sent on for the University examinations. This tends to a certain amount of concentration of effort upon those who intend to present themselves for the examination. *This concentration is not general, but special;* it is directed solely to the subjects which are to be taken up. In other words our educational organisation is such that *special "cramming" to pass examinations is a characteristic feature.*

We may first notice the physical consequences of this. The interdependence of the school's reputation and the percentage of passes tempts the teaching staffs of such schools to put the pupils under very great pressure, particularly in the case of boarding-schools. The parents are either unaware of this, or they imagine it is the price to be paid for success; and cases are not unknown where the health has been permanently impaired by the process, especially in the case of female pupils, on whom the heavy work, as a rule, falls during and immediately after the period of pubescence. Occasionally, even the gravest results follow.

No educationist of any reputation will defend "cramming" as an educational process.

The scheme of submitting oneself to an examination held by an outside body involves the employment of what are known as coaches. Coaches have a double function. In part they are, of course, true *teachers;* but the teaching element in their work is not its characteristic feature. They are concerned, not with thoroughness, but with skill in passing examinations. Their experience of the idiosyncrasies of examiners, and of the history of preceding examinations, is as important as their knowledge. Whether it is generally recognised by those who have the honour of setting the questions at examinations or not, coaches believe that, by a process of elimination, they can guide those who requisition their services as to how to prepare for a particular examination. They classify previous questions, then analyse them, and endeavour to determine the idiosyncrasies of each examiner in such a way as to decide what he is likely to do in his next paper. Noticing the character of the papers recently set, he advises the candidate that he will do well to disregard them and work on other lines. *The personality of the examiner is for him a far more important study than almost anything else. Experience has shewn that he would be in the last degree unwise if he merely urged his pupil to acquire a comprehensive knowledge of a subject, and then take his chances.* The "coach's" whole business is to help his client to distinguish himself with but a modicum of knowledge; and it is generally believed that pupils preparing for an examination will do *academically* better by a wisely-guided system of "cramming" than they will by broad and systematic reading.

The scheme is as demoralising as it is unnecessary. Its influence will disappear almost completely when we have a definitely organised scheme and thoroughly educated teaching staffs in secondary schools, to deal with the pupils under their own care, and appraise the educational status of those pupils.

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It is this fact that has been recognised in the European systems; and the graduating examinations at the close of the school career, held over the entire territory, are a great advantage over our system.

It is, of course, impossible to do without examinations, but real educational advance involves the abandonment, as far as possible, of all examinations that lead to "cramming." That is really the whole point.

12. *Minimising the evils of Examinations.*—We must not be premature in any endeavour to dispense with the present régime. *Before public examinations, held under the auspices of the University, can be dispensed with, it is absolutely necessary that secondary education be properly and definitely organised, and that the teachers in secondary schools be professionally educated and trained.*

The organisation of secondary education will involve a limitation of the absolute freedom of the existing system, but this limitation is in the public interest, and its incidence will not be felt as a hardship if it is brought out by a definitely indicated scheme of declared reform.

The imperfect character of a decision, based upon the way in which a paper is answered by an examinee working under abnormal conditions, with time limitations, subject to the chance of indisposition occurring, and to a certain amount of nervous excitement and tension,[1] is so glaring as to need but mention.

When the examinee is at work under conditions more closely approximating to the ordinary conditions, and is assured that his whole career will be taken into account, the situation is quite different and certainly more just.

To promote steady effort and thoroughness is vastly better, educationally, and an organisation of public education which is favourable to steady effort, governed by rational educational methods, is much to be desired. *It may take some time to bring this about*, but that the change should be made is incontestable.

For a fuller discussion of the defects of secondary education in the State, reference should be made to Chap. XXX, secs. 1–10.

13. *Connection of Secondary Education with University.*—To rightly appreciate secondary education, it has been necessary to discuss the function of the University in an educational system, and to shew its reaction thereon. For that reason chapter XXXII in the Report has been written. The complete discussion of the question of the highest form of education, in connection with secondary education, would be out of place; nevertheless, it is important to take account of the mode in which secondary education affects the work of the University.

The grade of teaching in the secondary schools of the State is such that the University does not and cannot work on a plane comparable to that of the Universities of Germany and other Countries of Europe, and *for the obvious reason that the preparation of the student is insufficient.*

The living power of a university worthy of the name depends upon its original activity and its capacity to stimulate students to the highest possible effort.

The attaching of importance in a University to the *power of teaching*, instead of to the *genius for research*, is, in itself, an evidence of the failure of our secondary-school system. This is the very serious fact we have to face.

University professors, whose time is frittered away in elementary teaching, will never have that mental freshness and exhilaration which comes from the stimulus of the highest planes of human endeavour. Anything to which they may attain is attained at undue cost, viz., that of abnormally stimulated instead of purely spontaneous effort. The absence of a good secondary-school system not only wholly alters the intellectual atmosphere of a community, and lowers the plane of work and the influence of a University, it also lessens sympathy with higher effort. Let it be remembered that *it is absolutely certain that our University life and University effort will never bear comparison with that of a Continental University until the undergraduate enters properly prepared for the higher plane of work.*

Those who know anything of the interior of University life know also that every capable professor deplores the fact that he cannot lecture on the plane that he would desire. Hence he himself has neither the stimulus, nor is he as stimulating, as he would be under the continental system.

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[1] This operates very differently with different individuals.

14. *Significance of the University for lower forms of Education.*—The opinion has been sometimes expressed, that if elementary education be made satisfactory, secondary and higher education may well be left to look after themselves. Were it not that persons who have received some of its benefits and profess an interest in education are known to the Commissioner to express such a view, it might seem unnecessary to offer any reply. The truth is, however, that there is a reaction between the highest and lowest forms of education.

That the English University is not always of a democratic type may be responsible for this view. Against it may be set the fact that Frederick William III, after the crushing defeat inflicted by Napoleon at Jena, 1806, founded the University of Berlin for the express purpose of endeavouring *to retrieve by intellectual power what had been lost through physical.* It is only when it is remembered to what terrible straits the country was reduced that one realises what a high appreciation of the significance of the highest planes of education for the development of a people was exhibited by the King and his Councillors.

That Germany has, all through, lavishly spent money to reinforce its brain-power will appear from the fact that "*the total sum spent by the British Government for the whole of the United Kingdom is less* (*even*) *now that the State endowment of one of the twenty-two German Universities was more than ten years ago.*" This fact is so astounding that the statistics on which it is based are given in the Report. [Chap. XXXII, sec. 7.]

As a community we do not yet realise the immense importance of a University of the research type to the community, and to the spirit which should *govern* the lower forms of education.

Our educational practice in this State has been to work rather from the lower forms of education upward, instead of from the higher forms downward. That is a misfortune. The history of higher educational effort throughout the world has shewn that *the well-being of communities, under the conditions of the modern world, depends upon the directive influences of higher knowledge.* If our State is to advance, the larger horizon which comes with higher education must influence our whole educational system, and be the guide of our commercial and industrial activity. Higher education must more powerfully stimulate secondary education than it has done in the past. The primary teacher too must derive his stimulus rather from the secondary teacher than from his fellow-teacher. It is by such a régime, viz., one in which the higher and more original activities coming through the highest forms of education tend to reach down and stimulate the lower, that we shall best develope, and Germany and German advancement is an historic evidence of this.

The absence of this healthy interaction, a result partly due to our defective educational organisation, is one of the defects which requires to be remedied.

IX.

REFORM OF SECONDARY EDUCATION.

[G. H. KNIBBS.]

1. *Prefatory Remarks.*—Assuming that the inferiority of our educational system has been completely demonstrated—an unbiassed examination of the question can lead to no other conclusion,—and that the degree of inferiority is *serious*, the question of reform becomes *urgent.*

Reform means expense; but apart from that factor, the task is one of great difficulty. *A good educational system* is not the creation of a day, nor of a year, nor of a decade, because *it touches all grades of education, from the lowest to the highest, and the results are attained but slowly.*

Reform must be steadily and continuously developed, and forward steps taken whenever economic conditions, and conditions dependent upon educational personnel, allow of the advance. Each step in the progress is a point of vantage facilitating further reform. As teachers become abler, so also do their pupils. As the scheme is perfected, the better condition makes the next step easier.

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Existing organisation and existing traditions have to be changed; and whether we move slowly or more rapidly, each step, as it has been remarked in the daily Press, *must be in the right direction.* That is why the aim-point must be definite, and why it is important that it should be determined, so as to embrace complete reform.

Each step in itself may not absolutely conform to the new ideal created as the aim-point of all effort. It is not essential that it should, but it is essential that its trend shall be in the right direction, and it is imperative that it shall contribute to the final result instead of hindering it.

2. *The Creation of a New Ideal of Secondary Education.*—The first essential of reform is a clear understanding as to the *truth about our educational status,* and the second *the creation of an ideal educational system to serve as a steady guide for our steps toward reform.*

So far as lay in their power, it has been the aim of the Commissioners, in their examinations of the educational systems of the world, and in their Report and recommendations, to keep in view these two essentials. And it is their hope that the Report will be of some slight service as a first effort toward creating the new ideal, which is necessary if we are to have a better system.

3. *Reform must commence in the State Schools.*—The control of the State over its own schools is direct and absolute, and it has, therefore, an opportunity, the nature of which may be indicated. It has already been pointed out that if the incompetency of the present method of staffing the schools is to alter, *normal schools will have to be created,* so that the primary teachers may be properly educated and trained for their work, the alternative being that we shall continue to send out as heretofore untrained teachers, with the result that the defects of our primary education will remain.

The secondary education in these normal schools could, to a limited extent, constitute the outward expression of the new idea; their internal arrangement and equipment could be made to reflect the modern idea of educational machinery, and be made worthy of a State system of public education.

In the matter of personnel, one cannot at once get the results of the more elaborate and perfect training described in the Report, but it is possible to secure a staff of progressive teachers, ready to adopt better methods, and in earnest about reform.

The Commissioners have already proposed that suitably qualified teachers be sent to study the training of primary teachers in Europe and America. The services of these would be valuable in the way of contributing to the desired end.

4. *Secondary Education for Primary Teachers.—Initially, the normal schools might form a special section of the State secondary schools,* somewhat on the lines outlined in the Interim Report in connection with the Geneva system. [Chap. V. secs. 3, 4, pp. 33–36, Interim Report.] Such a scheme would admit of the scope of the work in the secondary schools covering a wide basis, and thus it would be calculated to insure their success in a general way, and independently of their special function as normal schools.

5. *Secondary Schools in Larger Centres of Population.*—Should we fail to perceive that the results of a better educational system justify a much larger expenditure than the present one, and hesitate to deal with reform on an adequate scale, *a beginning can at least be made.* The first school might well be established in the Metropolis, and, later on, schools in the larger country centres could be founded.

This course would have the advantage of making secondary education available to a larger number of students scattered over the State, and at the same time would provide the form of education particularly needed for the proper education of the primary teacher.

The time is not ripe, nor is our population sufficiently large, for the establishment of separate schools of the three types referred to. Nor would it be necessary, if initially we decided to make English and Science the subjects common to all branches. The difficulty would be still further relieved if, instead of attempting to force the choice as to languages, we allowed the option of any two, ancient or modern.

6. *Necessity for excellence in the State Secondary Schools.*—The proper organisation of education requires that *ultimately* it should be subject to State control, to the end that it may be brought properly unified and co-ordinated.

Since coercive methods are not by any means the wisest, if the State is to insist upon control, its Education Department, its personnel and methods, must commend themselves to educationists and to the public. *It must practically govern by moral influence and acquire its power by virtue of the excellence of its administration.* This matter was dealt with at some length in the Interim Report. (See Summary, Chap. VII, secs. 4, 14, pp. 50–2; and body of that Report, Chap. LV, secs. 4, 5, 8, 19, pp. 476–480.)

In order to acquire the sincere respect and confidence of the public, in any attempt to lead the way in the reform of secondary education, it will be necessary to make the *State Secondary Schools public advertisements of the significance of a better régime than that at present existing.* When the State effort in secondary education has commended itself to educationists and to others who take any serious interest in education, the major part of the difficulty will have been overcome; in fact the difficulty of getting cordial co-operation in a comprehensive scheme for the organisation of secondary education will then have vanished.

7. *First Steps towards Reform.*—After the Department of Public Instruction has put its own house in order, it is desirable, with a view to inducing secondary schools to entertain the question of establishing definite and widely recognised curricula, and that of entering, as far as possible, into some general scheme for the co-ordination of secondary education, to ask them voluntarily to make *returns affording information in respect to the following matters,* viz.:—

(1) The members of the regular or resident teaching staff, and their professional qualifications.

(2) The same in regard to the visiting or occasional teachers.

(3) The detailed programme for every course of study which may be pursued by the pupils of their schools, shewing the part (if any) common to all courses, and the individual courses, distinguishing also between obligatory and optional subjects.

(4) The time-tables shewing the detailed organisation of the teaching.

(5) The detail of the pædagogical equipment of the school, shewing what portion is systematically used in the teaching.

(6) The type of seating accommodation, and the extent to which the requirements of modern school hygiene are met.

(7) The floor-space, cubic content, and window area of the class-rooms used for teaching, together with the actual dimensions, and the number of pupils for which they are designed.

(8) The playground or recreation area.

(9) General matters of educational interest not included in the above.

Later, the supply of such returns might be made compulsory in the case of all schools.

8. *Registration of Teachers.*—In the Report of the Royal Commission on Secondary Education in England, 1895 (Vol. I, pp. 318–321), the question of registration of teachers was discussed, and it was recommended that a register be established for all teachers engaged in secondary education. Effect has since been given to this recommendation, and it is now practically incumbent on all teachers in England to secure registration.

This is an important step, and we shall do well here to insist upon the registration of the entire teaching-staff of secondary and, indeed, of all schools Initially it would perhaps be sufficient to have a *record* of the professional qualifications of all persons engaged in teaching. *The question of a registration limiting the right to practice as a teacher could come up for consideration later.*

9. *Promotion of the Study of Secondary Education.*—It would be difficult to over-estimate the importance of *promoting in every suitable way the study of the organised systems of education in Europe*, so that our educational consciousness shall be alert to the essential differences between them and the unorganised condition of secondary education in England and in this State. As already remarked, this Report may be viewed in the light of an attempt to make a contribution thereto.

The real significance of good secondary education is that it enables both the lower and higher forms to achieve their ends. It is a necessary link in the educational chain, or, to change the figure, an essential feature in the whole mechanism. If we neglect it, we place ourselves in opposition to the educational traditions of the whole of Europe and America, with countries where the lowest and highest forms of education reach a plane far beyond what is achieved here, where the industrial and commercial activity is more thorough, and where the fruits of education confer efficiency in the field of industry, commerce, and general activity.

10. *Is Reform Practicable?*—The practicability of reform depends upon the measure of our earnestness. The Conference called together by the late Minister for Public Instruction [J. Perry, Esq., M.L.A.] gave a clear indication of an earnest desire on the part of primary teachers to move in the direction of reform, and by a unanimous vote it was decided to urge the abolition of what is known as the Pupil-Teacher System, the most glaring defect in our educational system. So complete an abandonment of the policy of the past, came as an astonishment to those who witnessed it. *This is an illustration of the inherent force of a better régime.* As soon as the more excellent way is understood, it will be acquiesced in.

Many prominent educationists, who are concerned more directly with secondary than with primary education, threw the weight of their influence on that occasion into the movement for the betterment of primary education, and greatly helped to secure a brilliant victory in the cause of reform.

One may be hopeful, therefore, that when those concerned in secondary education devote themselves to an examination of the issues which touch this branch of educational organisation, the result will be equally felicitous.

The educational traditions with which we have grown up are naturally tenacious of existence, and as a people we are sufficiently conservative, apparently, not to make mere speculative changes in this direction. The known earnestness of our educationists will, however, ensure a revision of our traditions, and one can rest satisfied that they will be ultimately transformed.

Touching the question of *popular opinion*, it may be said that there is a wide-spread feeling that something is wrong with our educational system; and it is certain that the part which secondary education ought to play is not well understood. The too common opinion, that we have no direct and national interest in this form of education, is one that can coexist only with a failure to understand the significance of the co-ordination of all grades of public education, and with blindness to the teaching of educational history in Europe and America. Our primary schools will *never* be what they ought to be unless we systematically bring the teachers thereof, during their professional training, under the influence of the knowledge which normally comes from a secondary school. They are, therefore, absolutely essential to the efficiency of elementary education, as was shewn in the Interim Report.

The common estimate of the position of secondary education we thus see needs be altered; for unless its function be rightly understood, reform is not likely to take place.

The Commissioner writing is aware that the ideal which he is attempting to create differs from the popular view. The new view is justified by the awakening sense of deficiency which is giving the greatest educationists of England deep concern. What has been learnt in Europe, and in many States of America, and is being learnt in the Mother Country is, that *secondary education is an indispensable feature of public education*, and one which must not be neglected if the State is not reduced to that mediocrity which would menace its very existence.

In addition to the importance of secondary education as a higher stage of preparation to the practical affairs of life, its relation to the University is a matter inviting attention. From this point of view, the ultimate step, the final aim of the whole movement of reform in secondary education, is to free the University from the necessity of holding mere entrance or similar public examinations, and to secure

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a higher degree of preliminary training in the students who enter it. Then, and then alone, can it work on the plane which gives it the essential character of a University, and then alone will it be free from the necessity of spending a considerable part of its energy on merely elementary teaching in science.

11. *Concluding Remarks.*—There are many other subjects worth discussion—for example, the desirableness of teachers being occupied fewer hours in actual teaching than they are at present, especially in the higher grades of secondary schools.

The Professional Education and Training of Secondary Teachers is also a matter which is worthy of elaborate treatment. The Report contains information, however, in regard to these matters, and contributes something to their discussion. Those really interested therein will naturally turn to the body of the Report for information.

The Commissioner desires once more to point out that the reading of this Summary can give but a poor conception of the character of secondary education throughout the world, and of the poverty of our present effort in that direction.

12. *Recommendations.*—The following recommendations give merely a general indication of the prominent steps in reform, and are to be read in connection with the preceding Summary and the Report :—

1. The immediate establishment in the metropolis of two thoroughly equipped State Secondary Schools, one for each sex, with classical, "real," and modern sections, following generally—but not exactly—the type of the Gymnasium, Realgymnasium, and Higher Realschool of Germany; but having in addition a pædagogic section for the education of teachers.
2. The establishment later of similar schools in the larger centres of population in the country.
3. The registration—say two years hence—of all schools and their teaching-staffs, throughout the State.

General Remarks.—These schools, especially the metropolitan, should be equipped on modern lines, their general hygienic arrangements and equipments corresponding to the demands of modern educational ideas. The science equipment should include apparatus, models, diagrams, and physical and chemical laboratories, for the teaching of physics, chemistry, botany, zoology, geology, cosmography, and astronomy, and should be of the type found in the European secondary schools.

X.

SECONDARY EDUCATION.

[J. W. TURNER.]

Introduction.

The Commissioner, in investigating the question of secondary education, studied the systems in existence in the great schools of England, Ireland, Belgium, Holland, Denmark, Sweden, Norway, Russia, Austria, Hungary, Switzerland, in addition to those of Germany, France, America, and Scotland, but time will only permit of anything like a full report on the schools of the last four countries.

This selection has been made, too, because the Commissioner believes that the secondary school systems, which obtain in those particular countries, are the most likely to provide us with the best types of secondary education for introduction into our own State. It is not intended, in making this statement, to underrate the importance of schools in the other countries, but in a Report which must have some finality, the Commissioner, in his judgment, gives preference to those schools which he has specially mentioned.

The most important point to bring out in this summary is the adaptation of the schools, which are fully described in the body of the Report, to the needs and requirements of the cities in which they are placed, and intimately connected with this view is the question of the *school curriculum* and *organisation* of each country. A close study of the systems will show the foresight and judgment of the educationists of the countries mentioned, and will give us an indication for future guidance. (I.)

(I.) Curriculum.

A.—*Germany.*

Germany provides three classes of schools for the secondary instruction of its boys and girls :—

1. The Gymnasium.
2. The Realgymnasium.
3. The Oberrealschule.

Each of these schools has a nine years' course, and in most of the large cities the three types of schools are found. Admission takes place after a three years' course in a preparatory school (very frequently found attached to the upper school) at about the age of nine years, and the teaching of the sexes separately is universally followed.

1. *The Gymnasium.*

The Gymnasium is a classical school in which special attention is given to the language side, particularly Latin and Greek.

The Realgymnasium is a reform school, with Latin, but not Greek, and special attention is given to modern languages.

The Oberrealschule is the modern school, with modern languages and science strongly represented.

An analysis of the time tables and syllabuses of some of the important higher schools in the large cities of Germany shows the following features :—

Goethe Gymnasium, Frankfurt.

[*Note* : In German schools the higher forms are known as I, II ; III is intermediate ; IV, V, VI are the lower.]

(*a*) *Latin.*—Latin is not introduced into the teaching programme until after three years are past, that is, when the pupil is about the age of 12 years, and then the subject receives ten hours per week in the middle forms, and seven hours per week in the higher forms.

(*b*) *Greek*—Greek is not introduced until six years have been spent in the school, when the pupil has reached the age of 14 or 15, and it receives six hours per week.

(*c*) *French*—French is taught from the pupil's first day in the school, and in the lower forms (Sexta, Quinta, and Quarta), gets six hours' attention per week.

(*d*) *English*—English is an optional subject in this gymnasium, and is only taken in the three highest forms.

(*e*) *German*—The mother tongue naturally holds an important place in the curriculum, and in no form receives less than three hours per week. German composition and literature are taught with great thoroughness. The advice and urgings of Frederick the Great have been most faithfully followed in the matter of the careful teaching of the German language.

(*f*) *Mathematics*—These branches receive five hours per week in the lower forms, and four hours in the higher forms.

(*g*) *Science*—Nature description gets two hours per week in the lower forms, and physical science is introduced in the middle and upper school.

(*h*) *Gymnastics.*—Three hours per class per week are devoted to gymnastic exercises.

Wilhelm Gymnasium, Hamburg.

(*a*) *Latin.*—Latin is introduced into this gymnasium at the very start of the pupil's career, about the age of 9 or 10 years, and the subject receives eight hours per week in the lower and middle forms, and seven hours in the upper forms.

(*b*) *Greek.*—Greek is introduced after the third year, about the age of 12, and six hours are devoted to it, per week, in each class.

(*c*) *French.*—French is begun after the pupil has been two years in the school, and does not get the same prominence as in the Goethe Gymnasium, Frankfurt.

(*d*) *English.*—English is an obligatory subject in the four upper forms.

(*e*) *German.*—German gets less time than in the Frankfurt Gymnasium.
(*f*) *Mathematics.*—These branches get less than in Frankfurt Gymnasium.
(*g*) *Science.*—Science has a place in every class.
(*h*) *Gymnastics.*—This branch of study is optional. Three hours are devoted to it in the week.

City Lyceum, Hannover.

(*a*) *Latin.*—Latin is here taught from the pupil's first attendance, and the time is apportioned as in the Wilhelm Gymnasium, Hamburg.
(*b*) *Greek.*—Greek is arranged as in the Wilhelm Gymnasium.
(*c*) *French.*—French is on the same plan as in the Wilhelm Gymnasium.
(*d*) *English.*—English is taught in the upper forms, and receives two hours per week.
(*e*) *German.*—German gets less time than in the Frankfurt Gymnasium.
(*f*) *Mathematics.*—Mathematical subjects receive less time than in Frankfurt Gymnasium, but more than in Wilhelm Gymnasium.
(*g*) *Science.*—Nature description is given in the lower forms; chemistry and mineralogy in upper forms, two hours a week.
(*h*) *Gymnastics.*—This branch receives three hours each week.

It will be noticed that opinions differ as to the time when Latin and Greek should be introduced into the curriculum of the Gymnasium, and also with regard to the introduction of the modern languages.

In the Hamburg school, Latin is commenced at the earliest opportunity, and Greek after the third year in the school, while in Frankfurt, Latin is not required from the pupil until he has been three years in the school, and Greek not till his fourteenth year of age, or six years' standing. In the place of Latin and Greek in these early years in the Frankfurt Gymnasium, French gets much prominence, and the mother tongue receives greater attention than it gets either at Hamburg or Hannover.

On the question of the early introduction of French into the curriculum of the Goethe Gymnasium, Frankfurt, Dr. Reinhardt, the Director, in addressing a conference met for school reform in Bavaria, in 1896, gave utterance to the following opinions:—In the present circumstances, it is indispensable for us to teach the French language in the gymnasium. It is a modern language, and, therefore, lies nearer to us than the ancient languages. Its application is easily found, and in teaching it, we can begin with concrete examples as afforded by the most familiar objects. For this reason it is placed at the commencement of the school course.

Dr. Reinhardt was careful to emphasise the fact that he was speaking from an entirely pedagogical point of view. Those who favour this point of view contend that the French language is (*a*) a good preparation for Latin, both in regard to grammar and vocabulary; (*b*) a sound basis for phonetic training; (*c*) a valuable training on account of its logical and literary aspects.

Continuing his address, the Director stated that if the French language is handled properly, the boy sees, even in the first lessons, what the object of it all is. The master proceeds with the objects of his pupil's environment, and comes to his help by the association of words with visible things, which is the most appropriate form of instruction for the "little man." The pupil learns to give a name to what he sees and to speak about it in a simple manner. With what he has learnt he can actually, after every lesson, exercise his newly acquired ideas in his home. In the family circle he finds with his new knowledge points of mental contact. (The German boy has the previous training of his parents to assist him, for they in their day received a training in the French language). The subject is popular with boys, as may be seen by noticing with what pleasure they try to make use of their French after the first lessons. In the further progress of French teaching the task is to lead gradually over from the sphere of empiricism to the region of abstract conception, and to give a preparatory training for a general receptivity for those languages in connection with which an intellectual perception is the principal thing.

In connection with the teaching plan Dr. Reinhardt made reference to the necessity for having suitable reading books, specially designed for the course outlined. In a later part of his address, when he dwelt upon the importance of French and its early introduction into any teaching scheme, he said: Inasmuch as French requires a considerably smaller number of lessons than Latin, teachers can in the first three years—and this is a great advantage in the new plan of instruction—devote a correspondingly greater number of lessons to the mother tongue. Thus they gain a more thorough culture in that element which should after all form the basis and central point of the whole of their teaching.

2. *The Realgymnasium.*

The Model School, Frankfurt.

(*a*) *Latin.*—Latin, as in the companion school, the Goethe Gymnasium, is not introduced into the Model School until the pupil has been three years in the school. After this it receives more attention than any other subject in the curriculum.

(*b*) *French.*—French is commenced in the lowest classes and is continued throughout the school, never receiving less than three hours per week. Here again the management adopts the system in vogue in the Goethe Gymnasium.

(*c*) *English.*—English is restricted to the two upper forms, where it receives considerable attention.

(*d*) *German.*—The mother tongue gets from *four* to *five* hours in the lower forms, and *three* hours in the upper forms, in each week.

(*e*) *Mathematics.*—The various branches receive in all five hours in the lower and upper forms, and four hours in the middle forms, in each week.

(*f*) *Science.*—Nature description is given in the lower and middle forms, and physics and chemistry in the upper forms.

(*g*) *Geography and History.*—These subjects are taught throughout the school, and the number of lessons each week ranges from two in the lower part of the school to three in the upper part.

(*h*) *Gymnastics.*—This subject receives three hours in each class per week.

Wöhler Realgymnasium, Frankfurt.

This school gives its pupils a choice of two methods:—

(1) A "General Curriculum" with Latin as the leading language.
(2) The "Frankfurt Curriculum" with French as the leading language.

(*a*) *Latin.*— Latin in the "General Curriculum" is introduced at the time of the pupil's admission and receives more attention than any other subject.

Latin in the "Frankfurt Curriculum" does not appear on the time table earlier than the third form (when the pupil is about the age of 12), but the hours devoted each week to the subject are many.

(*b*) *French.*—In the "General Curriculum" French is not on the time table earlier than the fourth form.

In the "Frankfurt Curriculum" French is started in the lowest form and continued throughout the school.

(*c*) *English.*—In the "General Curriculum" English is taught from the lowest third form up, a course of six years.

In the "Frankfurt Curriculum" the subject is not introduced earlier than the lower second form (a course of four years), but receives more time per week than what is given in the "General Curriculum."

(*d*) *German.*—German receives from four to five hours in the lower part of the school, and three hours in the upper school per week.

(*e*) *Mathematics.*—These subjects on the whole receive more hours per week than what is allotted to them in the Model School, Frankfurt.

(*f*) *Science.*—The branches studied in the upper school are physics, chemistry, and mineralogy; in the lower school nature description is given.

(*g*) *Geography and History.*—These branches receive from two to three hours each week as a rule, but in the fourth form "Frankfurt Curriculum," they get extra attention.

(*h*) *Gymnastics.*—Three hours per week are devoted to gymnastics.

Realgymnasium des Johanneums, Hamburg.

(*a*) *Latin.*—Latin in this school is introduced in the lower third form.

(*b*) *French.*—French is taught from the beginning.

(*c*) *English.*—English is begun in form four when the pupil is about 11 years old, and receives a large share of attention in every class.

(*d*) *German.*—The mother tongue has never less than three hours, and in the lower part of the school as much as six hours, per week.

(*e*) *Spanish.*—Spanish receives five hours per week,

(*f*)

(*f*) *Mathematics.*—These branches receive from four to five hours per week.
(*g*) *Science.*—Nature description is given two hours a week in the lower school; physics and chemistry receive *six* hours per week in the upper school.
(*h*) *Geography and History.*—These subjects receive from two to three hours per week.
(*i*) *Gymnastics.*—Two hours per week in the upper forms, three in the lower forms, are given to gymnastics.

The outstanding features of the Realgymnasium are the additional hours devoted to the teaching of modern languages, and the increased importance of the science work. The position of Latin in the curriculum of this class of schools is not finally settled in some of the German cities, for we find in the Wöhler Realgymnasium, Frankfurt, an option of two courses presented to the pupils—one providing for Latin from the date of the pupil's entrance, the other not till after the pupil has been three years in the school. In the one case French is commenced during the fourth year of school life, and in the other it is begun as soon as the pupil enters the school.

As a type of the German Realgymnasium that of Johanneums, Hamburg, may be cited, and in this school, in one of the higher forms, the curriculum provides for three modern languages besides the mother tongue. The inclusion of Spanish in this particular form and the omission of Latin may be considered, no doubt, as a departure in the direction of a commercial training. The increased time devoted to English and French in this form points to a more extended commercial preparation. On account of its commercial importance it may be noted that prominence is given to the Spanish language in some of the secondary schools of Belfast and San Francisco. The Johanneums School in its upper classes devotes *six* hours a week to physics and chemistry.

3. *The Oberrealschule.*

Before Holstenthore, Hamburg.

(*a*) *French.*—French is taught from the time the pupil enters, at the age of 9, and in the three elementary forms of the school gets six hours per week, in the three middle forms five hours per week, and in the three upper forms four hours per week.
(*b*) *English.*—English is commenced in form four about the age of 11 or 12, and four hours a week in each class are devoted to the subject.
(*c*) *Spanish.*—Spanish is optional, and is taught in the upper school only, receiving three hours per week.
(*d*) *German.*—German receives four, five, or six hours in the lower school, three or four hours in the middle school, and four hours in the upper school.
(*e*) *Mathematics.*—These branches receive not less than four hours each week, and in the majority of the classes five or six hours.
(*f*) *Geography and History.*—These subjects receive two hours in the lower school, four in the middle, and three in the upper, each week.
(*g*) *Science.*—Nature description receives two hours per week in the lower school, physics five and six hours in the upper school.
(*h*) *Gymnastics.*—Two hours each class per week are spent in the gymnastic hall.

Grossh. Oberrealschule, Karlsruhe.

(*a*) *French.*—French receives six hours per week in the lower school, five in the middle, and four in the upper.
(*b*) *English.*—English is introduced in form three, and four hours a week are devoted to it throughout the school.
(*c*) *Italian.*—Italian is taught in the four highest forms, and receives two hours per week.
(*d*) *German.*—German gets five hours every week in the two lowest forms, and four hours in all other classes.
(*e*) *Mathematics.*—The various branches receive five hours a week in each form.
(*f*) *Geography and History.*—These subjects receive two hours a week in the lower school, four hours in the middle school, and three hours in the upper school.
(*g*) *Science.*—Natural history gets two hours per week in the lower school; chemistry with mineralogy and geology in the higher school two hours per week; physics in the higher school two to three hours per week.
(*h*) *Gymnastics.*—Each class spends two hours per week in the gymnastic hall.

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The characteristic in the Oberrealschule is the great amount of attention bestowed on modern languages and science. Both Greek and Latin are dropped from the curriculum, and the time thus saved is divided between additional modern languages and science. The science course in the Oberrealschule, Karlsruhe, includes chemistry with mineralogy and geology, and physics, and the time devoted to these subjects is five hours per week. In the Oberrealschule, Holstenthore, Hamburg, six hours each week are spent in physics by the pupils of the senior classes. A complete syllabus of the work of this school appears in the Chapter on Secondary Education in Germany.

B.—*France.*

The French educationists made a very significant step in advance when, at the end of 1902, they brought their new scheme of secondary education into operation. The disappearance of Classical and Modern Baccalauréat of Secondary Education, and the introduction of the "Baccalauréat of Secondary Education" have prepared the way for the inauguration of the modern secondary school with its technical, commercial, and science sides, and have placed its pupils on an equal footing with those of the classical schools.

Admission to the French Secondary Schools takes place about the age of 11 years, after a four years' course of *purely primary* education, and the instruction extends over a period of seven years. This period is divided into two cycles, termed the "First Cycle" and the "Second Cycle." The "First Cycle" extends over four years, and pupils have a choice of two parallel courses—one in which Latin is compulsory throughout, Greek being introduced in the fourth class, about the age of 14, but as an optional subject; the other in which Greek and Latin are omitted, and additional modern languages, science and drawing are included.

The "Second Cycle" extends over three years, and pupils have the choice of four courses, viz. :—

1. Latin with Greek. This corresponds to the German Gymnasium.
2. Latin with a fuller development of modern languages.
3. Latin with a fuller development of science.

   (2 and 3: These correspond to the German Realgymnasium.)
4. Modern languages and science without Latin. This corresponds to the Oberrealschule.

A fine feature of the French system, which was also noticeable in their primary schools, is the manner in which they adapt their teaching to the needs of the locality. We admire their special syllabus in the maritime districts. Under the new scheme of secondary education the same common-sense ideas prevail. On the completion of the "First Cycle" a special course in science and modern languages may be instituted, when the circumstances warrant it, under the direction of the governing educational bodies having immediate control.

At the end of the "First Cycle" a certificate of Secondary Education may be awarded to those pupils who have satisfactorily gone through the four years of the course, and such certificate is a guarantee that those discontinuing their studies at this stage find themselves "in possession of a body of knowledge complete in itself."

C.—*America.*

Pupils may enter the high schools of America on the completion of an eight years' course (about the age of 14) embracing purely primary instruction. Recently, in some States, a movement has been started to introduce Latin, Mathematics, and a foreign language, into the final years of the primary course, and thereby to increase the period of secondary instruction. The course in the high schools extends throughout four years, and the curriculum is composed of obligatory and optional subjects. In many of the schools the subjects in the first year of the course are taken in common, and after that, while certain subjects are required, pupils are allowed by means of elective courses to specialise in the direction they desire. In addition to the required subjects, sufficient of the elective courses must be taken to warrant admission into a college or university.

New York.—A reference to the Chapter on the High Schools of America, where the course of study for the New York High Schools is set out, will explain the point just mentioned. In these schools it will also be noted that Greek although placed in each year's electives is not included in any one year of the required course, and that a choice is given in Latin, German, or French, for three years of the course, while in the fourth year Latin is omitted from the choice of required subjects but placed in the electives, and a foreign language is substituted.

San Francisco.—In the Girls' High School, San Francisco, the programme is divided into three courses :—Classical Course ; Modern Language Course ; English Scientific Course. Latin is an obligatory subject for the first and second year in the Classical Course and receives five lessons per week. In the same course Greek or French or German may be commenced either in the second or third year, and if elected, two years are required with a third year optional. The school prepares its pupils for the following institutions :—College of Letters; Colleges of Social Sciences, Natural Sciences and Commerce in the University of California; Colleges of Agriculture, Chemistry, Mechanics, Mining and Civil Engineering. Its recommendation, given on the completion of the full course, is acknowledged by both Universities in California, the Chicago University, and the State Normal Schools.

Detroit.—Detroit High Schools adopt a restricted obligatory course, but offer a liberal choice of optional subjects. English, Mathematics, Physics, and History form the basis of the course ; and specialisation may be made in languages—ancient and modern—science, commercial subjects. A graduation certificate, which may not necessarily include Latin or Greek, but in which English, Mathematics, Physics and a choice between Latin, French or German are compulsory, gives admission to the Michigan University. The management of the school is careful to point out that certain of the Universities and Colleges of America require both Latin and Greek for admission, and pupils intending to enter such institutions are advised to take the classical course in the school.

Springfield.—In the Central High School, Springfield, Massachusetts, a common course of study—English, History, Biology, Algebra, Latin or French or German—is offered for the first year. At the commencement of the second year pupils are advised as to their future plans, and are allowed considerable freedom in the choice of studies. The courses offered are General, College Preparatory, Commercial, and the programme in each consists of obligatory and optional subjects. The particular studies of each pupil are carefully differentiated and arranged in accordance with the requirements of the particular college the pupil desires to enter.

The scope of the work done in the high schools of America is fully set out in the syllabus of each of the following schools. (*Vide* Chapter on American High Schools) :—

New York High School ...	...	17 in number	(mixed and separate).
Springfield, Massachusetts	...	1 „	(mixed).
Detroit, Michigan ...	...	3 „	(mixed).
San Francisco, California...	...	1 „	(girls).

D.—*Scotland.*

The secondary schools of Scotland have preparatory classes which correspond to the Vorschulen of Germany. Generally after three or four years in the preparatory schools pupils are promoted to the junior school, and at this time the Scotch lad, now about 10 or 11 years of age, begins the systematic study of Latin and French. After about two or three years in the junior school, generally above the age of 12 years, the pupil is transferred to the senior school. In some of the schools the study of Latin and French does not begin earlier than the first year in the senior school.

Royal High School, Edinburgh.—In the Royal High School, Edinburgh, a choice of four distinct courses is offered to the boys :—

(*a*) Classical— Embracing Latin, Greek, English, Mathematics.
(*b*) Modern— Embracing Latin, German (in place of Greek), English, Mathematics.
(*c*) Commercial—Including English, French, German, and Commercial subjects.
(*d*) Scientific— Including English, French, German, and providing a course of training in physical and chemical laboratories, in workshops, and in the drawing classroom.

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The school prepares for the University entrance examinations, the examinations held by the Scotch Education Department for the different grades of leaving certificate; the examination in science held by the Science and Art Department.

George Watson's College, Edinburgh.—In the George Watson's College, Edinburgh, pupils enter the senior division of the School about the age of 13, and have a choice of a classical or commercial course. The classical course embraces Latin, Greek, French, English, Mathematics, but German may be substituted for Greek. Elementary science, almost wholly practical, is included in both courses. The commercial course includes English, Mathematics, Modern Languages, Science, Drawing, and the usual commercial subjects.

George Heriot's School, Edinburgh.—George Heriot's School, Edinburgh, provides a classical education for its students desirous of entering upon a University career. At the same time it is essentially modern in its organisation and gives in particular advanced instruction in modern languages, science, commercial subjects, and drawing. The provision for carrying out the modern scheme is very fine, and the school is celebrated for the excellence of its science teaching, the magnificence of the science equipment, and for the facilities offered for training in the workshop and in mechanical and architectural drawing. In the higher division of the school the work is arranged in two courses:—

(*a*) Science— Comprising English, Latin, French, Mathematics, Physics, Chemistry, Drawing, Handicraft.

(*b*) Commercial—Comprising English, French, German, Mathematics, Natural Sciences, Economics, Book-keeping, Phonography, Drawing, Handicraft.

The High School, Glasgow.—The High School, Glasgow, is one of the secondary schools of Scotland with preparatory classes containing pupils starting at the age of 6 years. This Preparatory Department is taught by mistresses who commence with Froebel's system. It is followed by the Junior Department of three classes taught by masters. This is followed by the Upper School consisting of seven forms. The diagram in the Chapter on Secondary Education in Scotland shows the two great lines of work followed—the Latin and Non-Latin—when the pupil starts in the Upper School. On the Latin line, Latin is introduced in Form I when the pupil is about the age of 12, and French in Form II, that is a year later. On the Non-Latin line, French is introduced in Form I at about the age of 12, and German in Form II, a year later. Along the Latin line a bifurcation takes place at Form III into a classical course (Latin, Greek, French), and a modern and scientific course (Latin, German, French). Along the Non-Latin line the course of French and German is continued unbroken. At Form IV the modern and scientific course divides into separate courses; the modern, continuing with Latin and Modern Languages as the leading subjects, the scientific, after drawing pupils from the Non-Latin line, continuing with Science and Modern Languages as the leading subjects. This division is introduced when the pupil is about 15 years of age. A reference to the synopses appearing in the body of the report will show at a glance the subjects and the hours for each in the four courses—Classical, Modern, Scientific, Non-Latin. (Forms IV, V, VI, VII). Each of the courses, Classical, Modern, and Scientific, affords a liberal education, and is an excellent preparation for professional and commercial life. The Commercial course is based on the lines of that in operation in University College, Gower-street, London, and those intending to take up business pursuits are recommended to complete the "Higher Commercial" course before leaving.

The Principal of the College, in speaking of the Leaving Certificate, which he states is practically a preliminary and entrance examination, is of the opinion that it represents a fair standard of intelligence, and while pointing out the dangers of premature specialisation urges parents to secure the attainment of the certificate before withdrawing their sons from school life.

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The following table shows the apportionment of the important subjects and hours for Form VI:—

Subjects.	Classical.	Modern.	Scientific.	Commercial.
	Hours per Week.	Hours per Week.	Hours per Week.	Hours per Week.
English	3	6	3	3
German	5	7	5	5
Latin	9	6	...	...
Greek	9	...	...	...
Mathematics	6	6	10	4
French	...	7	4	5
Physics	...	...	8	...
Commercial	...	...	...	15

Allan Glen's School, Glasgow.—In Allan Glen's School, Glasgow, Greek is not taught, in fact is forbidden. The School is devoted to secondary technical education. The syllabus appearing in the body of the Report indicates its aims in this direction.

(II). Organisation.

The foresight and judgment of the educational bodies governing secondary education in Europe and America are well exemplified in the character of the school buildings.

Site.—In many cities in the two continents the schools occupy most suitable positions, as a rule well within the city boundaries, and still away from the noise and turmoil of the business and manufacturing quarters. This fact is made very apparent on visiting the schools of Germany and the United States. In both countries these institutions rank amongst the most important buildings, and are found in the best positions in the different cities.

Buildings.—In Germany the school buildings are solid, substantial structures, usually of three floors, the architecture being of the plain, broad style of treatment. The internal arrangement is generally on the single classroom principle with wide, roomy corridors and a capacious auditorium for general assembly purposes. The greatest attention is paid to the lighting and ventilation of all the rooms. The caretaker's quarters are on the first floor and the basement is set apart for the machinery necessary for heating and ventilating the buildings. Provision is made for physical culture in well-appointed gymnastic halls. (*Vide* Report on Goethe Gymnasium, also illustrations).

In America the buildings are also of the solid type of character, a little more ornate, probably, than those of Germany. The interior construction provides for an auditorium, which in some cities is used by the general public, and which is large enough in most cases to hold all the pupils in attendance; for large, well-furnished schoolrooms corresponding in number to the grades or divisions existing; and for the various adjuncts which the American teachers value for the teaching of science, for physical culture, and for library purposes. Here, too, as in Germany, the greatest care is taken with the lighting, ventilating, and heating of all rooms occupied by the students. (*Vide* Reports on the High Schools at Springfield and Detroit, also illustrations).

Furniture, &c.—The classroom in the German secondary school is fitted with the adjustable single desk placed on an even floor; the blackboards are perpendicular and are arranged to slide up or down in a frame according to the convenience of the teacher; the pictures on the wall though few are good (the walls of the corridors in German schools are usually reserved for pictures and busts); and the maps roll up on a fixed frame placed in a convenient position in the classroom.

A specimen of this contrivance for using and preserving maps may be seen in the office of E. J. Forbes, Esq., Manager, Merriam Dictionary Co., Spring-street, Sydney, where, also, some types of the newest designs of school desks are on view.

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The American classroom is a picture of brightness. The furniture is made of light-coloured wood, the desks are single and light in construction, the blackboards are panelled in rectangular spaces around the walls between the windows, and the walls are hung with portraits of English and American poets, patriots, and philanthropists, whose choicest gems of thought find place below the portraits.

After the classroom arrangements in the German schools, one is struck with the various adjuncts to the general work, viz., laboratory, museum, library, gymnastic hall.

Laboratory.—An idea of the importance placed on science in the German school curriculum is obtained from the scientific laboratories attached to every secondary school. Without exception every school is equipped with a good supply of apparatus for teaching physics and chemistry, and it is quite clear that the apparatus is not in the laboratory for show purposes, for it bears evidence of constant use in practical demonstration. Some explanation of German progressiveness is to be found in the science teaching of its secondary schools, which has a place in the curriculum of both the classical and modern sides.

Museum.—Much has been said in praise of the organisation of the secondary schools of Germany, but there is no institution connected with them that can be considered superior to their excellent museums of natural history. All the more important sections of this science are represented, and some of the collections are extremely valuable. It would seem that the schools vie with one another in their efforts to obtain the most interesting specimens of insect, animal, and vegetable life. The managers and teachers of schools have the best opportunities for obtaining material for their museums and also for their physics laboratory from the establishments of such educational providers as Pichlers, Witwe and Son, Vienna, and Dr. Schneider, Leipzig.

Library.—The library of the German secondary schools as far as could be judged is one for reference purposes only. It is found in every school and contains the standard works of the mother tongue. There is no reading-room attached.

Gymnastics.—The German schools generally support a thorough system of physical training. The students undergo a regular course of systematic instruction which has its place in the weekly programme, and which is carried out with as much thoroughness as any other branch of learning. The students in most schools must spend from *two* to *three* hours each week in the gymnastic hall. Here the exercises are carried out under the direction of a teacher, who has had a proper training for the work, and consist of practice with the usual apparatus and also free exercises. The latter contain nothing better than those practised in the very fine scheme introduced by the Officer in charge of our Cadet Force and Superintendent of Drill in our own public schools, Colonel Paul. The Colonel we think will look with envy on a system which devotes two and even three hours per week to the physical training of its pupils. The gymnastic hall is conveniently situated in the school, and, as a structure, both externally and internally, forms no mean part of the general organisation. There is nothing about the hall to show that physical culture is relegated to an inferior position. The apparatus is good, the building is large, lofty, well-lighted, and has a cheerful appearance, and everything in the place is attractive. The German soldier, the German citizen, as seen in their own country, are active people. The young people play neither cricket nor football, but the methodical training they get in their schools makes for good physique. The German idea of physical training for their children is admirable.

All the necessary adjuncts to form a complete organisation are found in the high schools of America:—

Laboratory.—In addition to laboratories for physics and chemistry, splendid provision in the way of large, well-lighted rooms has been made for the teaching of biology, including physiology, botany, and zoology. These science rooms are provided with the most up-to-date furniture, and are equipped with all the needed conveniences for work.

Library.—Any school of importance has its library and a paid librarian on the staff. The books are used for purposes of reference and are lent out to the pupils.

Gymnastics.—The Americans, in common with all other English speaking people, are great believers in the value of outdoor games for physical training, and we find their people and their schools proficient in baseball, football, basket ball, &c.

Side by side with this outdoor training they have systematic instruction for their boys and girls in well-appointed gymnastic halls. It was feared that the stress laid upon the girl studying in the same classroom with the boy on the co-educational plan would lead to physical deterioration on the part of the former. To counteract any likelihood of such a result the gymnastic hall, in both mixed and separate high schools, has been made a very prominent feature of the school work. In the Wadleigh Girls' High School, New York, with an enrolment of over 2,000 pupils, there are two halls, equipped on the Swedish principle, under the direction of female instructors, who have been trained under that system. (*Vide* illustrations). As seen in Bonn and Stockholm, the girls are dressed in suitable uniforms, and all take part regularly in the exercises.

While it may be said that the high school buildings of Scotland are not so modern in construction and organisation as those of the Continent and America, it must be admitted that the provisions for teaching are in several respects quite on an equality with the best that obtains elsewhere. Particularly is this the case with regard to the science arrangements, the opportunities for technical instruction, and the attention given to physical training.

Laboratory.—Both the Government and the privately endowed schools have splendidly-equipped rooms for teaching science, and the schools that came under notice which deserve special mention in this respect are the George Heriot School, Edinburgh, and the Allan Glen School, Glasgow.

Technical Instruction.—In the Royal High School, Edinburgh, there are splendid shops for working in wood and iron. In the George Heriot School no attempt is made at acquiring specific trades, but boys receive a preparation for trade life. In well-equipped workshops, both for wood and iron, technical instruction is made educative in character, and mechanical and architectural drawing are correlated to workshop instruction. In the Allan Glen School, Glasgow, besides the sciences and mathematics, there are courses in engineering. The School leaving certificate admits to the diploma curriculum of the Glasgow and West of Scotland Technical College.

Physical Training.—The Scotch educationists are quite alive to the value of physical culture and its importance in the school curriculum. The well-appointed school gymnastic hall is common in Scotland. That in the Royal High School, Edinburgh, is said to be the largest and best equipped in the United Kingdom. A splendid swimming bath, in the same school, with the most modern conveniences, has no counterpart in the Commissioner's wide experience of school organisation. The George Heriot School has a fine hall for gymnastics, a well-appointed swimming bath, and a magnificent playground. In the High School, Glasgow, a record of physical measurements and tests, as prescribed by the Anthropological Society, is kept. (*Vide* Chapter on Secondary Education, Scotland.) A very fine cadet corps is attached to this school.

(III). Conclusion.

When our own State secondary system of instruction is compared with what obtains in other countries, it is at once seen by how much we fall short. It is no exaggeration to say that in the matter of secondary education we have no place among the nations. Many cities in Europe and America have their different institutions for the higher education of their pupils, and in numerous instances towns with a population in no way comparable to that of Sydney have infinitely better provision for secondary education. New York City alone has seventeen public high schools; the town of Detroit, with a population about half that of Sydney, has three public high schools, with thousands of pupils in attendance; Springfield, with less than 100,000 inhabitants has two largely attended public high schools. In Germany public high schools are established in the smallest cities, and it is quite a common experience to find in each of the larger communities the three great types of secondary schools. In Sydney we have two public high schools, one for boys and the other for girls; in the country two public high schools, one for boys and the other for girls, both in the town of Maitland. The total enrolment in the four public high schools is below 600. These are the only public high schools in the State of New South Wales.

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The positions of the secondary schools of other countries, especially those of America and Germany, have evidently in many cases been chosen so as to provide the greatest comfort for teachers and pupils in the matter of studies. While accessible to the main bulk of the population, the schools are away from the disturbing elements of the busy quarters of the cities. Neither high school site in the city of Sydney is a desirable one from the standpoint of teaching. The Boys' High School is in a busy industrial centre, where the clang of the hammer is too often an accompaniment to the teacher's efforts and the student's thoughts. The Girls' High School, one of the oldest structures in Sydney, abuts on two streets traversed by trams, and the constant noise therefrom must interfere greatly with the oral work of the classes.

The secondary school buildings seen on the Continent and America are superb structures, and are replete with all the most modern ideas that school architects can devise. The countries which would appear to have given most thought to internal arrangements of school construction are the United States, Switzerland, Germany, Norway. The comfort of both pupil and teacher has here been closely studied with special regard to lighting, heating, ventilating, seating. The illustrations and the letter-press appearing in the body of the Report will convey some idea of the attention given to school hygiene in the countries named. Judged by this standard our public high schools occupy a very insignificant position, and in no particular of school hygiene or school construction do they compare with those of other countries. The Girls' High School is altogether unsuitable as a school.

The various adjuncts considered so indispensable in other secondary schools are absent from our State High Schools. The outstanding feature of the German, French, Scotch, and American schools is the splendid provision for science teaching, which, in the case of the three first-mentioned countries, leans largely to physics and chemistry, and in the other country to biology, at the same time that a fine course is also offered in physics and chemistry. No public high school in New South Wales, as far as the Commissioner knows, is provided with laboratories for the teaching of science. He is aware that physical science is included in the curriculum of the Boys' High School, Sydney, in the four upper forms; but the instruction is given in the physics laboratory of the Technical College adjoining, by one of the College instructors. Quite recently a science-master has been appointed to the school.

The museum of natural history is a most necessary part of the organisation of all secondary schools in Germany. The wide corridors of the schools of Germany and the vestibules of the schools of America are miniature picture galleries adorned with some fine works of art.

The aula of Germany and the auditorium of America are sufficiently large for purposes of general assembling of pupils. In the aula, some of the finest efforts of the architect are noticeable, and the public have contributed to the general effect by embellishing the rooms with valuable paintings. The auditorium in America, in addition to its use for the assembling of pupils to receive general instructions from the principal, is occupied every morning, in some schools, for the usual morning devotions, which consist generally of the reading of a chapter from the Bible, the singing of a hymn, and the repeating of the Lord's prayer.

The organisation of our public high schools provides for little in this respect. The absence of wide corridors and vestibules in our high school buildings, and the very limited size of the assembly rooms, where they exist, affect to some extent the discipline of the schools.

Both in the German and American secondary school the gymnastic hall or gymnasium is a prominent factor in the teaching. We can readily understand why the German devotes so much attention to physical culture indoors. The German boy, or, in fact, any boy on the Continent (excepting, of course, the English boys attending in sufficient numbers some school on the Continent) has no outdoor game, such as cricket or football, that makes for physical development; and, as a consequence, his physical training is carefully considered in the gymnasium. The American understands all the advantages gained by outdoor sports, and still he provides for physical training indoors. The Commissioner sees an advantage in the American scheme, for while he is an ardent admirer of cricket and football, he is forced to admit that too many of our boys who indulge in both these pastimes grow up flat-chested and round-shouldered—defects in physique which only the well-appointed gymnasium can cure. Our high schools have nothing worthy of the name for systematic indoor physical culture. The

The provision made in the secondary schools of Scotland for systematic physical training is to be commended. Not only do we find splendidly-equipped gymnastic halls, but fine swimming-baths are attached to several of the schools, and the teaching of swimming is a recognised subject in the physical section of the curriculum. In this particular respect the secondary schools of Scotland lead all others.

In the matter of organisation, particularly with regard to general architecture and internal arrangements, the following schools appeal to the Commissioner as models for this State to copy :—

The schools of Switzerland afford good types of school architecture, especially with regard to the single classroom arrangement. Any town will afford an example. The school may be seen in Lausanne, Berne, Zurich, Basel.

The schools of Germany show splendid scientific equipment, provision for teaching natural history, and the arrangements for physical training. Any large city will provide for these three sides. Frankfurt, Cologne, and Hamburg afford good examples.

The schools of America supply good examples of the roomy vestibule, the well-equipped and cheerful laboratory, the gymnastic hall. For specially good features, Wadleigh High School, New York; Central High School, Detroit; Central High School, Springfield, may be mentioned.

The schools of Scotland contain very fine science laboratories, and some of the best halls for physical training. Among the schools visited, the George Heriot, Edinburgh ; the Allan Glen, Glasgow; the high schools of Edinburgh and Glasgow, rank high in the Commissioner's opinion.

With regard to the pupil's term of attendance at the secondary schools in various countries, and the course of study, it may be noted :—

The course of the German secondary school commences when the pupil is about 9 or 10 years of age, and at its completion he is about 18 or 19 years of age.

The course in the French secondary school begins after the four years' primary course, when the pupil is about 11 years of age, and is completed at about the age of 18.

The high-school course in America begins about the age of 13 or 14, after the primary school course is over, and is completed about the age of 18.

The school course in the High School, Glasgow, commences about the age of 12, after a primary course, and is completed about the age of 18 or 19.

The school course in the State high schools of New South Wales begins with the standard of the third class of a public school, but a fair percentage of pupils are admitted as a result of scholarship and bursary examinations, and start in the upper part of the school. The course covers seven years of work.

The programme of studies in the secondary schools of Germany consists of a compulsory list with a few optional subjects; in the schools of France an option is allowed towards the completion of each cycle; in the American high schools the required list is small while the optional or elective subjects are numerous; in the schools of Scotland every subject in the programme is required; and in our own high schools the programme is laid down with little in the way of optional subjects.

In several of the foreign schools the hours of study per week are long, but, on the whole, not much longer than the time spent in our own high schools. It is generally stated and believed that the age at which pupils in secondary schools in other countries complete their studies is later than with us, and it is also generally acknowledged that the student who completes his full course in the high schools of those countries is in a more satisfactory position to continue his studies at the higher educational institutions than is the case with our students.

The action of the Professorial Board of the Sydney University in raising the matriculation standard is a proper step, and one result will be to improve the position of the boys attending our secondary schools when they enter the University. The regulations in connection with the Board's decision could, the Commissioner thinks, be improved in one direction, viz., by leaving Latin in Section A, and higher Latin in Section B of their report, optional subjects. This, he considers, while giving the classical schools every opportunity on the Arts side, would afford the student, specialising in science, facilities for successful work in the Science Schools of the University.

With

With our secondary system of school education on a basis similar to that of Germany, Scotland, or America, it would be worth while considering whether the *abiturienten examen*, the final examination of the nine years' course in the German schools; the *higher leaving-certificate* in the full course of the Scotch schools, which practically covers the preliminary and entrance examinations; the *graduation certificate*, which marks the completion of the American high school course; or an examination of equal value should not be introduced into our State system of secondary instruction.

The Commissioner has a great admiration for the excellent science schools of Edinburgh and Glasgow. He also has a great leaning in favour of the programme of the American schools, mainly because it offers so many avenues for the pupils' varied talents. It is an expensive system, for the many developments which must necessarily arise from such a freedom of choice cannot be carried out without great outlay of funds. The American citizen contributes ungrudgingly towards the support of education. And when it is considered that education is free to every pupil in the States, from the lowest primary to the end of the high school course, and in some States through the University, we must admit that the American's belief in his country is well-founded. If we as a nation are to keep step with America, and as our nearest business neighbour we must do so, then it behoves us to be guilty of no niggardly action in establishing and maintaining the best kind of schools.

In drawing these conclusions there is no concealed attack on the work of our State high school teachers. They are without exception cultured men and women; many of them are our own trained teachers, who, in addition to their practical knowledge of teaching, have distinguished themselves at our University. Their qualifications, therefore, are of the very best. In their day and time our high school buildings have served their purpose, but now they must be superseded by modern structures so that we may come into line with the progressive peoples of the world.

(IV). Recommendations.

1. The abandonment of both high school sites in Sydney after suitable provision has been made elsewhere. The Boys' High School buildings could be utilised by the Technical College. The Girls' High School site belongs to another Government Department and may be required at any time.

2. The erection of a Boys' High School in a suitable and accessible position, with all the modern ideas of construction, for classical education. (*Vide* particulars Classical Schools of Germany, Scotland, America.)

3. The erection of a Girls' High School in a suitable and accessible position, with all the modern ideas of construction, for classical education. (*Vide* particulars Girls' High School, New York.)

4. The erection of a High School of the type of the Realgymnasium or Oberrealschule of Germany, or of the American High School, but the electives not to be on the classical side. This school might be erected with separate buildings for the sexes, adjoining one another, and with laboratories common to both boys and girls, to be used at different periods of the day.

5. The erection of a High School of the type of the George Heriot or Allan Glen of Scotland. Such a school might be placed in any one or more of the following suburbs—Newtown, Redfern, Balmain, North Sydney—and would serve to relieve the congestion existing at the Technical College.

   This arrangement of High Schools, together with the commercial high school and the manual training high schools recommended in the chapters on Commercial and Technical Education, would provide the city of Sydney and the State with a system of secondary education as up-to-date as any on the globe.

6. High schools on the American principle, specialising according to environment, or in some localities schools of the George Heriot type, should be established in important centres as Newcastle, Grafton, Armidale, Bathurst, Goulburn, Wagga, Broken Hill.

7. While it may not be desirable to introduce the co-educational plan of instruction, buildings should be so arranged as to admit of easy access on the part of both sexes to common laboratories.

8. Scholarships should be awarded from the proposed district model schools granting admission to *any* State High School.

9. Admission to a State High School should not be allowed *before the completion of the primary school course.*

10. The fee at present charged should be reduced by one half. The Commissioner is an advocate for an absolutely free system, as obtains in America, but such a recommendation at the present juncture is unfortunately out of the question.

11. The schools should be staffed with highly-trained and scholarly men and women. The scheme suggested to the Minister of Public Instruction for the training of Public School Teachers will, if carried out in its entirety, provide in due course most capable teachers for secondary schools.

XI.

CONCLUSION.

[G. H. KNIBBS AND J. W. TURNER.]

In transmitting to Your Excellency this Report of the more striking features of secondary education of other parts of the world, the existing system of secondary education of this State, and suggestions as to the nature of improvements which in your Commissioners' opinion may be affected therein, it remains but to add that the extended Report following hereinafter, viz., Chapters I–XXXIII, is not really of the nature of an appendix.

It expresses in greater details the Commissioners' views and the facts upon which they are founded; it affords more complete information as to the character of secondary education in other countries, and its place in their educational organisation. It discusses incidentally many questions of educational interest, and the whole tendency of modern educational reform.

For this reason the body of the Report is intended to be read in connection with these summaries. Their real function is to give a general conception of the whole question, prior to that detailed reading which, for the formation of responsible opinions cannot be avoided.

Finally your Commissioners hope later to have the honour of submitting for Your Excellency's acceptance, a Report upon Commercial, Industrial, Agricultural, Technical, Professional and Higher Education.

We have the honor to be,

Your Excellency's Most Obedient Servants,

G. H. KNIBBS.
J. W. TURNER.

6th October, 1904.

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APPENDIX.

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As pointed out in the Interim Report, it is true that the Department of Public Instruction has had a task of singularly great difficulty. To provide education for the whole area of our sparsely-populated territory is a tremendous task, and is one which might tax the resources of a community in any part of the world similarly situated. Unless, however, education in the larger centres achieves a higher excellence than is possible with such education as may be carried into thinly-populated districts there will be no *centres of educational influence*. The index of the educational ideals of any country whatsoever is the type of education developed in the cities, towns, and villages, and is not to be judged by the schools in the country; and the general state of education in any State that neglects making that of its metropolis and larger centres of population equal to that provided in the cities, etc., of the older and more highly developed nations, must necessarily be indifferent throughout. Centres of population are centres of influence, and the education therein is the dominating influence as to educational ideals.

Since our whole communal effort—industrial, commercial, or other—must greatly depend upon our educational system and its consequences in the minds and hearts of the State's citizens, each step is important; and since also each rests upon what preceded, the defect in the primary system involves all that follows.

It is from this standpoint that the whole question must be reviewed, the defects in the primary system being regarded, not as things in themselves, and cut off from all consequence, but as limitations to subsequent opportunity. *Secondary and higher education can never achieve its end, unless the elementary education upon which it must necessarily be based is sound*, and is excellent in quality.

2. *The Interim Report.*—A brief analysis of the Interim Report is essential to a proper understanding of its continuation here.[1] It will be necessary to refer only to the extended report. The following tabular statement will reveal its general character:—

Chapters.	*Subject-matter discussed.*
I to III.	Educational inquiry, its range and significance, and the bearing of educational theory thereon.
IV.	The Kindergarten and its function as the basis of all educational systems.
V to XIV.	Primary education in various parts of the world and its general features. This section contains evidence of the high character of the education in other countries.
XVI to XVII.	The moral and physical elements of education.[2] These are discussed as to the principles involved, and in the light of experience in all parts of the world visited by the Commissioners.
XVIII to XXVI.	Important subjects in school curricula are discussed, with a view of exhibiting more fully than was possible in Chapters V. to XIV. the state of education in other countries, and the educational principles involved. The subjects discussed were (fig. I) Manual training; (2) Sloyd; (3) Elementary Drawing; (4) Ancient and Modern Languages; (5) Geometry; (6) Geography; (7) Arithmetic and Algebra; (8) Natural Science.
XXVII to XXXIX.	The training of primary teachers in various countries. These chapters contain evidence as to the high character of the general and professional education of teachers in European countries, and in parts of America and Canada, as well as the United Kingdom, and educational principles are also discussed. A contrast is also made between the professional education of teachers in New South Wales and elsewhere.
XL to XLII.	Special schools for defectives, and for the deaf and dumb.
XLIII to XLIV.	Compulsory attendance, truanting, industrial, and reformatory schools.
XLVII to XLIX.	Hygiene in relation to school buildings, their general arrangements, their furniture, and the condition of the children while at work therein. It is shewn in these chapters that the school hygiene of our State is seriously defective, in comparison with that of modern European schools.
L to LVIII.	A number of general questions are discussed; for example, the educational equipment of schools, pædagogical museums, the question of the best scheme of inspection, of co-education, of the organisation of education through a properly co-ordinated scheme, the relation of the State to all education, the New South Wales system, the drift of modern education generally, and finally the question of establishing rural schools for thinly-populated districts.

These chapters reveal the following facts, viz.:—

(i) That we have no system of adequately educating teachers for their professional work.
(ii) That we regularly employ, as an integral part of our system, wholly untrained and imperfectly educated persons as teachers (pupil-teachers), and assign them responsible duties.
(iii) That our schools are not designed so as to admit of satisfactory teaching.
(iv) That they are structurally defective as regards lighting conditions.
(v) That they have no adequate teaching equipment, and often no equipment at all for science teaching.
(vi) That no programmes have been elaborated affording sufficient guidance for the various classes of primary schools under the Department of Public Instruction, and shewing the development of each subject taught.
(vii) That the precipitate inclusion of subjects without careful preparation of the teachers for teaching them, does not constitute the reform of the nature required.

It may be said that the root of the whole matter is, that each teacher is not prepared for his work by being brought into touch with the whole history of the development of educational process, and of its philosophical theory, nor is he sufficiently well educated both generally and in the subjects he will be called upon to teach, before he is actually engaged in teaching. It

[1] How necessary this is, has been demonstrated by the fact that some professed critics failed to recognise any plan in the document.

[2] Chap. XVI of the Interim Report discussed the "Education of the Will." A lecture on the same subject, but quite differently treated, will be found in the Report of the Commissioner of Education, U.S.A., Vol. I, pp. 721-740, 1902 which just reach the State at the time of writing this Chapter.

It has been shewn that this practice of employing wholly untrained and very imperfectly educated teachers is absolutely inconsistent with a good educational system. Briefly, it may be said that the Interim Report aims at placing the reader in possession of sufficient evidence to reveal the real state of our system, and to place the matter beyond all reasonable doubt, and further to shew that all radical and fundamental improvement must commence with the higher development of the teacher himself. Better education of our teachers, and a better system of preparing them for their work as teachers: that is the key to the whole position.

3. *The Connection of a Primary and a Secondary System.*—In considering secondary education certain points call for special attention. In Chapter LIV. of the Interim Report, the co-ordination of education is discussed, *see* pp. 469–474; in sec. 2, p. 469, the successive periods of education are divided into the kindergarten, 6; transition, 6–7; elementary, 7–10; primary, 10–12; higher primary, 12–14; secondary, 14–16; higher secondary, 16–18; and superior, 18 onward. This question of the relation of the steps will be discussed in the next chapter. Here it will be sufficient to remark that the best form of education for the ordinary artisan in the primary and higher primary stages is not the best form for those who pass through those stages merely as steps onward towards secondary or higher education. In a new country, the opportunities that come to citizens are of a somewhat different character, and of a different frequency from those in old-established countries. For this reason it should be borne in mind that the educational system of this State should facilitate as much as possible, the passing on from the primary to secondary and higher education, by so constituting the primary system, that it will serve as a normal preparation for secondary education. In other words, the primary school in our State should, on the whole, be a preparation for the secondary school, while it should allow certain special options for those who wish to qualify only for artisans, tradesmen, etc. In the larger centres it will, of course, be easy to make the preparatory school (for secondary education), a lower division of the secondary school itself, and, in fact, this is actually done in the State "high schools,"[1] as they are called. In this State there are what may be called the ordinary "Public School," and the "Superior Public School." The relation of these and of the "High School," to what may be called the normal path of progress leading to the highest form of education, is a question of considerable moment.

The requisites of co-ordination have been pointed out in Chapter LIV., secs. 4 and 5, p. 471, of the Interim Report. It may be taken for granted that the ultimate career of a child must, in any great scheme of public education, be left undetermined until he is at least ten or twelve years of age, and although children of that age can hardly be called upon to make a final decision as to their career, they must make at least some choice in respect, for example, of languages, either ancient or modern.

Since languages, moreover, are essential elements in that liberal tincture which must exist in all forms of higher education, they cannot be ignored up to 14 years of age. It has been pointed out that though it is not desirable to do so, languages may be postponed till 12 years of age is reached, especially if etymology be included in the two years from 10 to 12.

There can be little doubt, however, that as the educational system becomes consolidated, languages will tend to be taken earlier than 12, and as early as (ultimately, certainly not later than) 10 years of age. In this way substantial, though not absolute, identity in the educational path obtains right up to 12 years of age for all classes of pupils, viz., for those who intend to abandon liberal education and pass into the practical walks of life at 14 years of age, as well as for those who intend to proceed with a liberal education.

The system of public education under the State, should make full provision, in its normal course, for the passage onward to secondary education; and it can do this only by including suitable preparatory subjects, and good teaching therein. The preparatory subjects should, however, be optional for children whose parents desire that they should abandon school-life at 14 years of age. As already stated this matter will be treated more fully in the following chapter, and needs to be borne in mind in analysing the educational practice of other nations. In this connection attention may be drawn to Chapter II of the Interim Report;—*see* more particularly secs. 2 and 3; p. 4; Chapter V, sec. 1; p. 32; Chapter VI, sec. 1, p. 51; and Chapter LIV, sec. 10, p. 473. The several sections quoted from the Report, discuss the principles underlying the matter, and shew the essential features of the difficulty associated with any scheme of primary education that is intended to apply to all classes of the community up to the age of 14 years. They shew also that the constitution under which a people live, and their temperament and temper, have a very real influence, and that a decision on this question must take these facts into account.

It may be added that in Europe, where questions of practical and theoretical pædagogy have received a degree of attention unexampled in any other part of the world, unless it be in America, the question of the continuity of study has been thoroughly studied,—a fact which renders European opinion of great importance.

4. *The Proper Attitude to Educational Experience.*—The rational study of any subject fundamentally differs from the empirical, in this important respect, viz., that the former takes account of the *reason why* each particular thing exists or is done, and the latter does not. It is because of this that the rational study affords a ground of confidence for independent opinion, and may even justify a departure from the lines of past experience. Empirical study, on the other hand, leads one to look for the sanctions of an actual example, and to the adoption of some particular form of institution as model. Thus prejudice and merely arbitrary decision are likely to be more operative in the latter case.

Applying this to the question of education, one may be *tempted either to blindly follow some model, or, on the other hand, to strain excessively after originality.* Now, while originality is sometimes eminently meritorious, it is quite possible for it to be associated with inferiority. We shall do well, therefore, to weigh more carefully any supposition of our being able to fundamentally improve on the better forms of European education.

Again, while it must be admitted that it is only by a rational study of the educational systems of other countries that one can hope to rightly guide the attempt to reform, it must also be remembered that our own contribution to educational experience has not a high value: we are not yet in a position of advantage as regards the criticism of educational method and practice generally. The

[1] The High Schools under the Public Instruction Department.

The teaching-staffs of Europe and America are not only among the great contributors of the results of original research in all branches of literature and science, they have also discussed almost every possible question that can arise in the theory and practice of education. There is also a degree of mental attrition between country and country, and between mind and mind, as well in Europe as in America, that has no counterpart in this State or this continent. Bearing this fact in mind, and remembering that we are under no obligation to *blindly* follow any particular lead, it must be recognised that European experience, and indeed also American, has a unique value for us. We shall do well, therefore, in any effort to be original, to avoid differing merely for the sake of differing, since that would almost certainly lead to the adoption of the inferior. The high professional training of the whole teaching staff of Europe has not been without its influence in perfecting the educational system by its reaction thereon. *The cosmopolitan interest in education of the chiefs of the various departments, their wide reading, their linguistic attainments, and the extent of their general culture, has inevitably given considerable value to their opinions;* and the translation of those opinions into the educational systems by way of various modifications and developments has justified this dictum, for there are few steps that could possiby be regarded as retrograde.

The more one knows of the European literature on education, and of the higher planes of American investigation of educational matters, the more one is *disinclined to repose confidence in the crudely-formed opinions of a limited experience;* and the more is one compelled to demand that any recommended form of education shall be guaranteed by a thorough study of the well-considered principles expressed in the educational practice and theory of other parts of the world. Countries where mental achievement, to say nothing of commercial and industrial, has so far eclipsed anything which has been yet possible to us in this State, are countries that we should be ready to emulate. We need to have also that self-reliance which results, not from a disposition to under-estimate others, but from a desire to give a respectful consideration to any real attempt to understand those who have distinguished themselves in the field now under consideration.

5. *Concluding Remarks.*—The consideration of the general question, viz., how to thoroughly equip each class in the community for its life-work, demands the consideration of questions which might at the first glance appear to have little reference to the question of State-education. An instance that might be cited by way of example, is the question of the State's attitude toward the matter of apprenticeship, and the relation of technical education thereto. This question will form the subject of a chapter hereinafter, since it is one of great importance. It will suffice to observe here that technical education has greatly modified the question, and with enormous advantage to the individuals concerned. Throughout an effort will be made in the conclusions finally expressed, to embody results based not merely on the evidence deduced in the Report, but on the wider area of reading which the Commissioners were inevitably involved in undertaking, and which is not represented in the pages of the Report.

CHAPTER II.

General Observations on Secondary, Technical, and Higher Education.

[G. H. KNIBBS.]

1. *Introductory.*—In Chapter LIV of the Commissioners' Interim Report, some idea of the scheme of *co-ordination of education* was given, the main features of kindergarten, elementary, and primary education, viz., of education up to the age of 14 years, being dealt with in its various chapters.

Practically the only form of higher education really discussed, was the professional education and training of primary teachers. It remains now to consider the whole scheme of public education from the termination of the primary period onward, and to deal in detail with the *professional education and training of teachers for all forms of education following on the primary stage.*

The essential feature of a properly co-ordinated and complete system of public education, is a perfectly definite scheme of educative qualification for all the ordinary walks of life, the programme in each case indicating what the accumulated experience of mankind has shewn to be the best or normal scheme of preparation.

For certain callings a good system of primary education is obviously the only necessary initial preparation. For others, however, the education must be continued as far as the lower, or even as far as the higher grade of secondary education; while for the higher professions, proper preparation demands various kinds and degrees of superior education. In discussing secondary education the purely technical forms of education will not be considered as included.

2. *Secondary Education.*—Systematically considered,[1] secondary education has, as one may see, necessarily a double, or even a triple function. It may be regarded as:—

(i) The preparatory stage of education necessary for various higher avocations and careers.
(ii) A preparation for higher technical, or other form of special education.
(iii) A necessary stage in the normal path leading to the highest forms of general education.

In other words, the path of normal education may be regarded as progressing in a direct line from the kindergarten to the end of the career in a University, but from the end of the primary stage of the path, that is from 14 years onward, successive by-paths of a special character are required to meet the exigencies for the various walks of like. At each of the points where these branch out the purely educational path may also be abandoned for the corresponding practical career. Obviously

[1] Secondary education with some authorities denotes practically all forms of education for pupils between 14 and 19 years of age, which are not *directly* of the nature of trade instruction. This is *not* the sense in which it is here used.

Obviously education may be divided into two distinct types, viz., that which aims at being *general*, or which may be regarded as qualifying for life generally, *i.e.*, without respect to the special needs of particular avocations or careers; and that which is *special*, viz., that which, abandoning generality, directs itself to the needs of special careers. Thus the *forms* of education are grouped under two great divisions, viz.:

(1) *General*, and (2) *Technical*,

the latter word being used in the broadest possible sense. The division into liberal and technical is less significant because *technical education may be liberal in its influence*, and indeed is very often conspicuously so—a fact which however is often overlooked.

3. *Apprenticeship and Systematic Education.*—In connection with the technical branches of education there are some great features which command immediate attention. The most striking is the general tendency to eliminate the various older forms of apprenticeship, at least as schemes of practical education.

The objections to apprenticeship are obvious; and have led educationists to recognise that systematic instruction must inevitably produce better results than can be hoped for, from that irregular and unsystematic teaching which is received during all, and especially the older forms of apprenticeship. This disappearance of the apprenticeship methods of education are characteristic not only of the *professional callings*, but also of *trade-occupations*.

It is of course true that, in general, the systematically-trained student of every kind has, on leaving his special school, an *insufficiency of practical experience*. But on the other hand he has, by his systematic training, been qualified to quickly profit by such experience; he has a more intelligent conception of the nature of his task, and of the general aim of all that he is called upon to do. He has abandoned a purely *empirical* method of professional education or training to adopt a *rational* one. He learns, not merely by practice, but by grasping the *meaning* of practice. During his studentship, his effort is directed moreover to acquiring an "all-round" knowledge of the subject in which he desires to become a proficient. Under apprenticeship, on the other hand, *his practical instruction is virtually limited to such actual practice* as his master's business happens to admit of, and his conception is correspondingly limited. Further, his time is much less profitably occupied, that is to say, he learns more slowly.

This question is of sufficient moment to demand very thorough discussion, and is dealt with hereinafter.

4. *Significance of Secondary, Higher, and Technical Education for the State.*—All human activity is ultimately dependent for its wise direction upon the highest forms of human knowledge, consequently, although the numbers passing through the different grades of education diminish as we pass from the lower to the higher, the importance increases. *Captains of industry* are necessarily fewer in number than the individuals of the army operating under their direction, but the achievement of each and all of the latter, the individual and collective success, depends upon the command or grasp of knowledge of the former. And in general, *the success of each nation in competing with others, depends upon the highest reaches of its ability*, as well as upon the individual reaction thereto; or, to state it otherwise, its real power is determined by the intelligence and force of its leading men, and by the degree in which these influence the masses.

In relation, therefore, to all forms of education following on the primary, and from the point of view of the State, the question worthy of consideration is "*What educational scheme will make our people the intellectual, moral, industrial, commercial, and professional equals of the higher civilised nations?*" This is the question which must be answered, if possible, by the Commissioners' recommendations.

5. *Difficulties in Making all Forms of Higher Education Thorough.*—A systematic consideration of the various forms of education higher than primary involves, as mentioned, the pointing out of what may be regarded as appropriate qualification for any particular form of occupation; and in this connection it may be said, that the subject is not without great difficulty. The principle, as implied in the preceding report, Chap. LIV, secs. 4, 5, etc., is that the fullest possible opportunity should be given to pass, during the educational career, from one line of intention to another, provided always that thoroughness be ensured throughout. Touching this last matter, it may be mentioned that excellent and complete as the German system of education is, it demands a somewhat early decision—in fact, a premature decision—as to career. This limitation is well recognised by the German educationists themselves, but is very difficult to avoid when excellence is to be characteristic of each branch. The only practicable scheme of escaping the limitation, involves making greater demands on children in the primary school, with a view to keeping all alternatives open till at least the close of the primary school-period. This has not been recommended in the previous part of the Report, but it should be kept in view in considering the future trend of education. The reform movement in Germany is directed against the necessity of a too early decision as to career.

6. *Curricula not Necessary for all Forms of Education.*—The elaboration of complete curricula for every form of secondary, technical and higher education, would be an extremely difficult task and probably as unnecessary as difficult. It would be difficult because the elaboration of a perfect curriculum presupposes not only that satisfactory teaching power is available, but also because an absolutely perfect knowledge of each subject is the indispensable condition of being able to produce an absolutely ideal curriculum; it would be unnecessary, because it will be a considerable time before every form is required here, and by then the curricula will have been greatly advanced.

Some indication of the teaching of subjects at present unnecessary here is, however, not wholly valueless. It helps us to realise what is done in the way of providing for the needs of the people of other countries, and therefore serves as an example, and throws some light upon the educational principles adopted.

7. *Imperfection of Systems which Attempt to Combine Artisan and Professional Education.*—Though complete curricula for the teaching of all subjects are unnecessary, nevertheless it is important to indicate fundamental principles, and among other things to shew clearly, why a hybrid system, which attempts to combine artisan and professional education, is an impracticable system, and *at best an injurious "make-believe."*

Ordinary

Ordinary unskilled labour and the lower forms of office and warehouse occupation demand really nothing more in the way of initial preparation than the primary education already dealt with.

For skilled workmen and workwomen, for artisans, for properly qualified office and warehouse hands, a scheme of education which may be called *continuation*, is needed, and in many countries this is provided for mainly by evening classes, attendance at which is in some cases compulsory. For a still better grade of instruction, day-continuation schools are necessary or, at least, are advantageous.

Such education as that last mentioned cannot lead on to higher, *i.e.*, University education, inasmuch as the scheme of qualification could not possibly be made thorough. The proper intermediary form, leading on to superior education, is secondary education.

A higher type of practical or technical development can be achieved through *secondary schools*, which qualify not only for higher education, viz., for the University and for special education in professional engineering, architecture, surveying in its various forms, dentistry, higher commerce, etc., but also for an intermediate grade of knowledge in the professional or quasi-professional occupations, or all occupations demanding a wider outlook and more thorough knowledge than can be acquired in the primary school.

8. *Necessity of Several Grades of Technical Education.*—A little consideration will reveal the fact that outside a few simple handicrafts, more than one grade of each special form of technical education is, in general, required. For example, in agriculture, the ordinary farmer needs in addition to his primary education some elementary instruction in rational agriculture, etc. If he propose to farm on a considerable scale, a still higher degree of agricultural knowledge is necessary to afford him a reasonable assurance of success, for his farming operations must be founded on scientific principles. To understand the application of physics, chemistry, etc, in practical agriculture, he must therefore have special instruction in scientific agriculture. Again, one who wishes to teach such applications of science to agriculturists, or who proposes to professionally advise in regard to agricultural operations on a large scale, obviously needs still higher qualifications, viz., an agricultural education of university grade.

The same observations apply to commercial education. The lowest grade might well be given in a continuation school and be regarded as equipping for ordinary clerkships or for mere book-keepers. Responsible clerks and accountants require a distinctly higher degree of education, comparable in character to ordinary secondary education, while the highest form of commercial education would, as in agriculture, be of university grade, and given in what might be called a Commercial University; such, for example, as an institution of the type of the academy at Neuchâtel or the higher section of the commercial institution at Cologne or Leipzig.

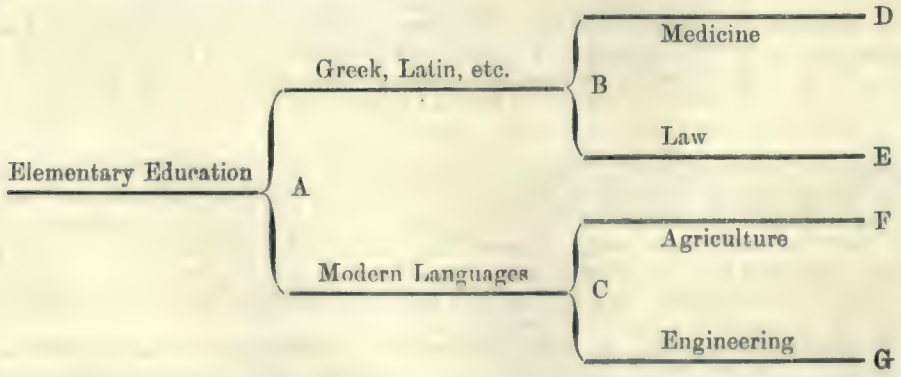
It is needless to multiply examples. The essential is that in the higher grades the initial preparation must necessarily be better. In the special instruction not only must the technique be more elaborately developed, but the whole grasp and outlook upon the question enormously increased; this last element being conspicuously important in the development of the highest grades of technical and professional education.

9. *The Co-ordination of Education.*—In dealing with various forms of higher education, whether of a general or a special character, there is no serious difficulty in the direct line of progress from the stage of infancy to the terminal stage in any career, provided that initially the career be definitely fixed. The matter may be illustrated by likening education in its various forms to a tree. One may pass along the trunk of a tree, then along the limbs and branches, till the end or a twig is reached.

Human affairs, especially in a young country, are subject to flux; the demand for a particular type of activity is very liable to vary during the long period necessarily devoted to the higher forms of education; the intention of the pupil or student himself may change; it may be found that the career originally selected does not continue to offer adequate inducement; it may also be revealed during his education that a pupil's tastes and aptitudes lie in quite a different direction from what was originally thought to be the case.

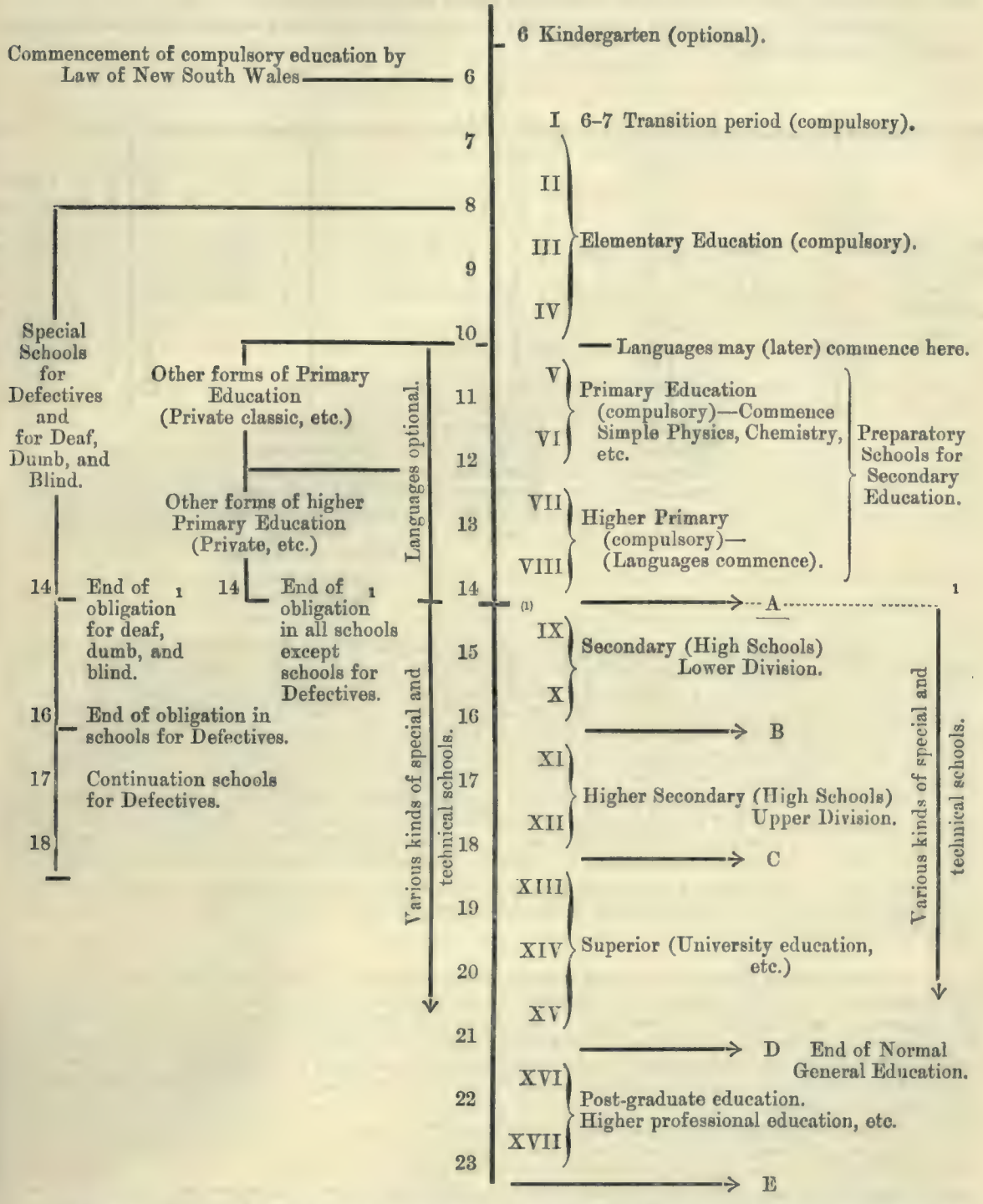
For this reason an educational system that is tree-like in its development has certain serious disadvantages, which, as pointed out, characterise the German or any other system that aims at great thoroughness.

If the terminal on any educational path be found undesirable, there is in general no alternative but to return to the point of divergence. Suppose, for example, the scheme of development is as follows for Medicine, Law, Agriculture, and Engineering:—



Then, if the student who reaches C, intending to go on to G, change his mind, he would in some systems have practically to return to A. When the co-ordination of a system can be made to secure thoroughness, together with a considerable degree of freedom to move from one line of educational development to another, the advantage is as great as possible. Hence a good system has some slight analogy to the venation of a leaf—that is to say, the current of education can flow along short paths of qualification (anastomoses) which bring one from any one line of educational development to any other.

10. *Points of Departure in Educational Scheme.*—In a graphical representation of the path of education, *general* education is appropriately shewn by a straight line, from which at various points, special forms of education depart, or education is abandoned for the life-career. That outlined in Chapter LIV of the Commissioners' Interim Report may be extended as hereunder, the points A to E being the points of departure, either for the career chosen or for special forms of education.



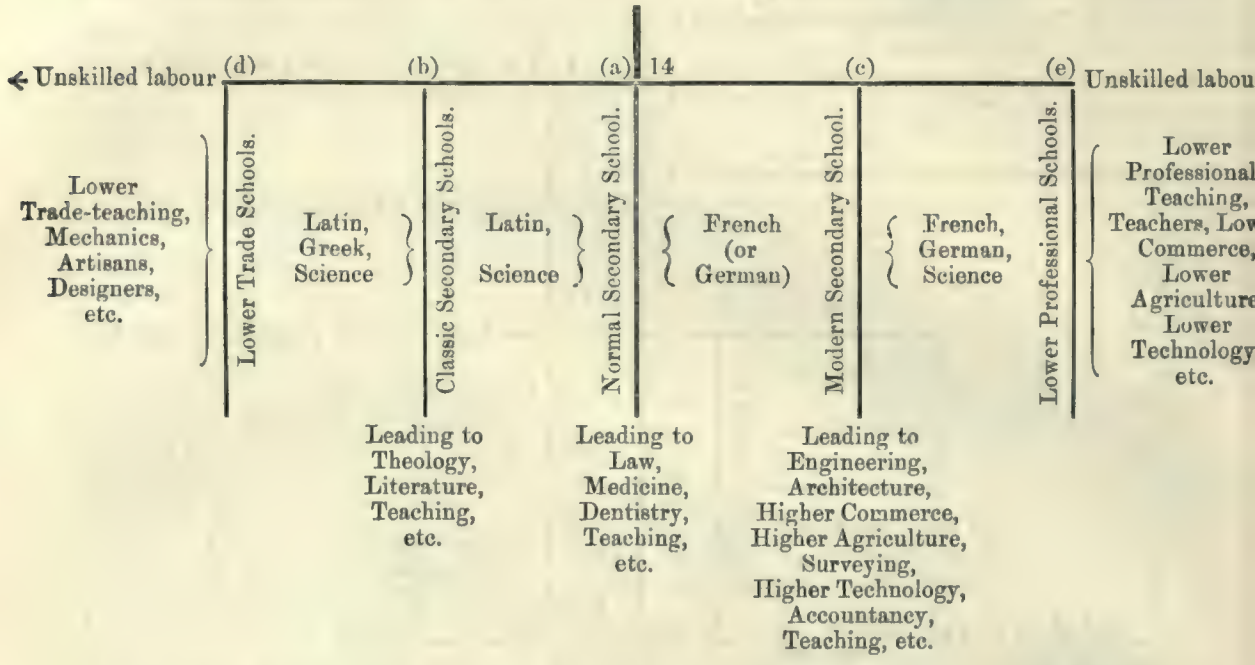
(1) NOTE.—Neither ancient nor modern languages should be compulsory; but pupils not taking them should be considered as not qualified to enter upon secondary education. They would, of course, be qualified to enter upon some of the various forms of special or technical education. From 10–14 there could be a lower grade school *not* qualifying for secondary education, and a higher grade qualifying for secondary education.

On looking more carefully into the question of representing *general* education by means of a straight line, it will be seen that a choice must be made of one of the various forms as expressing what may be called the *normal form*. This choice may well follow the German "*Real Gymnasium*" as model, for it embraces the study of the *mother-tongue*, an ancient language (*Latin*), a modern language, and science. The "Real" side on the one hand, with only modern languages and science, or, on the other, the "Classical" side entirely without modern languages, and with but little science, may be regarded as less liberal in their influence, and therefore not as *normal* but rather as *special* forms of general education, the leaning in the former case being to modern languages and practical utility, and in the latter to ancient languages.

[1] Children are frequently able to reach the required standard between the ages of 10 and 11. The obligation of attendance then ceases.

languages. It does not, of course, follow that the normal course so defined is the most useful course, nor is it necessarily the *most* liberal. Every advanced scientific student needs both French and German to maintain reasonable access to scientific literature. Latin and Greek are also decidedly advantageous, but to insist on four languages in addition to the mother tongue would be to heavily load the course, especially with the non-conversational (grammar) methods adopted in learning the classical languages that prevail in this community, and, also, to a large extent extent, in England.

The trend of education from fourteen years of age onward could be represented then somewhat as in the following sketch :—



In regard to passing from any one line to any other, assuming that the science is identical throughout, clearly the pupil who has taken (a) could qualify for (b) by confining his attention to Greek alone, and it would only be necessary to devote his whole time thereto for a limited period. Similarly, he could qualify for (c) by devoting himself similarly to French or to German alone. On the other hand, the pupil who has taken (b) initially would have to take both French and German; while he who has taken (c) initially, would have to similarly qualify in Latin and Greek. This is not exactly the German system, for science is less seriously studied in the classical gymnasium than is contemplated here.

The part however that mathematics and the physical sciences are playing in the development and affairs of the modern world, indicates their significance *even for those whose education is intended to be purely liberal*, while they are imperative for those whose education aims at being practical. Bearing in mind, therefore, the great advantage to be derived from giving science uniform value in the three collateral branches of secondary education, the question is at once raised whether it is desirable for us to follow the German system in its integrity in secondary and higher education. This is a question which must hereafter be discussed.

11. *Elementary Science the Common Foundation of all Forms of Secondary Education.*—In so far as it is true that the function of scientific knowledge in modern industrial, commercial, and general development is one of continually increasing significance, so does it become important that all persons who are to be regarded as broadly educated shall be familiar therewith. The day has undoubtedly passed when the dead languages may be considered as *uniquely* the common element of all culture. That question is one which has recently received the fullest consideration in Germany, and must therefore be thoroughly discussed hereinafter.

Without affirming it to be essential, if it be true that an intelligent outlook upon the world involves some elementary knowledge of science as well as of the mother-tongue, then these two subjects may well constitute the common element of *all* branches of secondary and higher education. To follow such a principle would have also the advantage that to pass from any one to any other of the secondary paths it would involve only the study of the omitted languages, and it would in all respects be the simplest possible.

It may here be mentioned that much of the intense antagonism felt by men of the more practical cast of mind in regard to any proposal that Latin should be maintained as a normal element in secondary education, is to a large extent a consequence of the present very imperfect manner of teaching it and of the attitude of mere pedants. It is probable however that, in the near future, the teaching of languages will be very much improved, interest will be increased by learning to *use* the language, and in this way it will become relatively easy to attain a given degree of excellence, and the devotion of much less time will be required. (This question has been discussed in Chapter XXII of the preceding report).

However cordially Latin may be accepted as a *normal* element, *the whole drift of modern education is against constituting it the common and necessary element* of all higher education, and this fact is due to the recognition that the creative energy of mankind is of great importance, and is not dependent on access to ancient literature, nor is it greatly helped thereby, except indirectly. It is not too much to say that on the contrary the classical tendency is not creative; at best, it is only critical. At the same time it must be recognised that the study of the dead languages, as an intellectual discipline, is of higher value. The question of their place in secondary and higher education demands the most careful consideration, and a chapter (III) has, therefore, been devoted to the consideration of the place of Greek and Latin in an educational scheme.

12. *Influence of Classical and of Scientific Education.*—Classical education tends to strengthen the critical and judicial faculty in respect of things human, and to develope the purely literary instinct. But when it is recognised that its material is the record of the originating activities of man in times past, it becomes evident that it is not entitled to that unique respect which has often been claimed for it. In fact unless broadened by mental philosophy, it is liable to degenerate into mere pedantry.

Scientific education also developes the critical and judicial faculty, but rather in regard to man's relation to external nature than in regard to his inner life; it is not, however, favourable to the cultivation of the purely literary instinct. It also seriously needs supplementing by mental philosophy.

Classical education, morever, is mainly informative, and though scientific education may be the same if it be not experimentally treated, it is to be observed that almost invariably it is experimentally taught.

In the true sense, literary *education*, which involves classical, will involve also literary exercises; and similarly, true scientific education will involve scientific exercises, viz., actual observation and touch with the things of Nature.

It is thus seen that for the production through education of a normally constituted man, it is necessary that education touch all planes of our being in both its elements, viz., the reflective and the executive. Since we must be observing, critical, and practical, in regard to both the inner and outer life of humanity, and in respect of the movements and energies of the external world,—not only in themselves but in their incidence upon man himself,—it is essential that a normal system of education shall play upon our whole nature. This is probably why the German system of education has produced its excellent results. It has not, so far, abandoned the elements which touch the imagination, an abandonment which leaves the mind so impoverished that only *mechanical* conceptions have any reality or influence with it.

13. *Normal Path to Higher Education.*—The normal path to all higher activities is obviously that which attempts to develope all planes of our being, hence there is some justification for the form previously suggested, viz., that which includes one ancient language (Latin say), one modern language, as well as science and the mother tongue. Such an education helps to bring the classic influence to bear; it gives touch with the great activities of modern civilisation; it tends to enlarge sympathy beyond the bounds of one's own nationality. Thus it is at once cultural and practical, for it so educates as to give universal touch, *i.e.*, touch with mankind and with the world; it confers on each individual such breadth of outlook and fulness of power as he is capable of receiving.

14. *Equality of Academic Dignity of Different Educational Paths.*—The educational world has been by no means wholly free from superciliousness in regard to different types of education. In England, at the present time, the votaries of classic education have sometimes been betrayed into the expression of a feeling of more or less marked hostility for other forms of knowledge; and it is not unknown for science to be designated in such a way as to tend to bring it into disrepute with the unformed and impressionable minds of schoolboys. This is unquestionably both illiberal and injurious.

It is well known that Greek and Latin are not less well learnt in Germany than in other parts of the world. Notwithstanding that fact, recent educational progress in that country has ensured the recognition of the three types of secondary education as officially of equal academic dignity, and opinions have changed as to what really constitutes *liberal* education. There is little doubt that this official recognition practically determines, ultimately, public estimation, for to-day the three forms of secondary education, viz., that supplied by the "Oberrealschule," the "Realgymnasium," and the classic "Gymnasium," are accorded an equality of respect and academic privilege. This will be referred to more fully hereinafter, as it is a matter of considerable moment.

15. *Higher Education.*—With a good primary and secondary system, the highest grades of education may be vastly improved. By the time a student has completed his course in the higher secondary schools of Europe he is well-informed, and, consequently, the plane on which the University can operate is correspondingly raised.

In the systems of England and Australia, while it is true that the reading of classics is often well-advanced, it is not true of the other branches of education, and, judging education as a whole, the general condition of things is by no means satisfactory. As propædeutical to the University career, the secondary education referred to must be recognised as seriously limiting the possibilities of undergraduate work. There is consequently a characteristic difference between the student life in Continental and English Universities. It is a great advantage, academically and practically, when the plane of work is transferred from learning to research; when the desire to become *erudite* changes to the desire to become *creative*; when collaboration and research can be substituted for teaching and learning. In this highest plane the professor and student are really co-students, the former simply being the more advanced.

16. *Educational Influence of Original Research.*—The kindergarten method developes keenness of observation and fosters the tendency to creative activity. Realistic activity in the primary school, and the substitution of direct touch with reality for mere memory of reality, begets practical knowledge, and practical power. The disposition to *do* is added to the wish to *know;* action springs from knowledge; and if man eats of the tree of knowledge it is to strengthen himself for the world of creative toil. In this connection the great importance of the attitude of the University, and of the higher technical schools to *original research* is perceived, and there are few things better calculated to bring about a vivid appreciation of the limitations of our knowledge.

It would indeed be difficult to adequately realise to what extent the efforts put forth in the research laboratories of universities and other superior schools have contributed to the command of man over the materials and the energies of Nature. The characteristic feature of *human* life is that strange power to recognise and to utilise the limitless stores which Nature seems prepared to yield as tribute to sufficient intelligence and force of will. The great features of modern civilisation in which man's creative, industrial, and commercial activity are expressed, depend very largely indeed upon the highest planes of education, and upon the opportunity afforded by institutions representing these planes for the expression of inventive faculty and of genius. And it is from this point of view that it becomes apparent that the University must, in relation to the whole educational body, ever constitute its chief centre; it is, in fact, its *brain*. Only in so far as its nervous influence passes downward to every other member of the educational body will that body be energised and developed. If

If the tone and activity of a University is of the proper character its influence will tend, in so far as it is allowed free expression, to raise and vitalise the lower institutions of learning, thus it is an educational factor of the highest importance, and its opportunity for self-activity should be completely assured.

Mere literary culture, being one-sided, frequently leaves people blind to the fact that the life of a University depends upon the stimulation of its members to those original and creative efforts which express themselves in discovery and invention in the fields of science and original research.

These in turn not only awaken the lower planes of education to a recognition of the truly educative character of all such effort, but they become almost immediately valuable in racial development, for they are the key by which the treasures of Nature are unlocked.

Modern Commerce and Industry are not only largely dependent upon the results of scientific research through new discovery, but the whole tendency and character of commercial and industrial activity may at any time be completely transformed; consequently, the power to think and to adapt oneself to entirely new conditions is of the highest importance educationally, and must be kept continually in view.

17. *Professional Schools and Universities.*—The distinction between general and special, or liberal and professional, forms of education continues right into the highest branches thereof. There is a sense, however, in which *all* forms of education may be regarded as liberal: so, too, there is a sense in which, similarly, they may all be regarded as merely professional, *i.e.*, as a preparation for some walk of life. This fact has, perhaps, led to some confusion of idea in regard to what may be called the comparative dignity of various forms of education.

The Universities have, of course, always aimed at being the homes of the highest forms of learning, the repositories of the highest reaches of human knowledge. But this fact, however, has occasionally led to some degree of superciliousness in regard to forms of knowledge of more immediate, or perhaps more *obvious*, application to the affairs of every-day life. Hence, so-called Liberal Education has often, and still is, contrasted with Professional Education, somewhat to the disadvantage of the latter. The really important distinction seems rather to be that all forms of education may be treated from a liberal, or from a merely professional, standpoint. Now, the University ought, as its very name implies, be adjusted rather to the former, and the Polytechnicum or Professional School perforce somewhat to the latter view.

There is another distinction also of importance to which attention may be called. The University, if it is to be truely liberal, must endeavour not merely to rest content with past achievement, but to contribute to the intellectual heritage of the race of which it is the custodian. *Erudition, however great, is not the essential feature of liberal culture*, and a University which rests satisfied with mere erudition will certainly develope the spirit of the pedant. The corrective to the development of such a spirit is to be found in the maintenance of an active sympathy with all effort at original research or other contribution to the ever growing store of human knowledge and experience. It may here be said also that the natural fruit of literary culture ought to be literary production.

18. *Association of Professional Schools and Universities.*—In some countries, Germany for example, the professional schools and universities (Polytechnica und Universitäten) are distinct, at least for certain professional callings. In these States, as in the United Kingdom, they are associated. The question of the resultant tendency of such association is one of considerable moment. If it be to accentuate the truly liberal spirit, to promote a clearer perception of the trend of all human effort, then the association is undoubtedly most valuable.

On this point it may be said that, taken as a whole, the evidence supports the view that the university spirit strengthens the *liberal* elements of professional education, while the practical or rather *professional* forms—for the really liberal are of truly practical value—tend to counteract the tendency to mere scholasticism. While, therefore, the maintenance of the University spirit in its integrity is of an importance that cannot be easily overstated; and while also professional education cannot be allowed to degenerate into a mere academic erudition as to the various matters with which the acquaintance ought to be thoroughly practical, a scheme which brings those who are being professionally educated under the true university influence and at the same time brings the university student proper into sympathetic touch with the aims and objects of professional education, is of very high value. It is a factor in national progress that dare not be overlooked, for it is only in this way that a sufficiently numerous educated and liberal public can be created, with adequate insight and sympathy to carry the rest of the community onward in the march of progress.

This raises the question as to how the association of the University and Professional Schools can be secured in such a way as to benefit both, and to ensure to each a maintenance in the fullest possible measure of its characteristic or appropriate form of activity. This is a question to which a full report must perforce address itself.

19. *Post-graduate Education.*—The efficiency of all education depends upon how far it is permeated by the spirit that controls its highest reaches. All advanced countries have made ample provision for the prosecution of advanced study and research. Obviously all inducement of the mature student to continue his education into those higher reaches, where, instead of walking in the footsteps of his predecessors, so to speak, he is called upon to tread new paths for himself, must exercise the highest of educational influences. The inspiration of the work of such students is the secret of the astonishing achievements in modern Science. If one looks through the researches of the higher class of student in the various institutions of learning, that is, researches of the character indicated, the sum total will be found to be very great. Now, the effect of this is not apparent to the masses, nor is it exhibited so much in their self-directed effort, as in the direction which the more educated section of the community, including the captains of industry and commerce, give to the effort of the masses. *Any thorough national system of education must promote post-graduate study and research.*

20. *Importance of Higher Activity of all Teachers.*—From the teaching staff of the Kindergarten to the professorial staff of the University or Polytechnicum, it is necessary for teachers to be exercised in some other work than teaching, at least if they are to maintain sympathy with the spirit of progress and are to widen, as life goes on, their horizon or general outlook. Wherever this is not done, there is, as is well known, the tendency to mental inanition or even decay, the evidence of which is an increasing sense of sufficiency. Real progress, in virtue of the ever-extending field which it brings into view, creates, on the contrary, a sense of insufficiency—that is to say, it produces exactly the opposite effect; and through this it intensifies sympathy with all higher effort, and engenders that real affection for knowledge which comes to those who are *deeply* conscious of their limitations.

It is thus seen to be important that even primary teachers, and still more secondary and higher teachers in any educational system, should not only have opportunity, but also be required, not by direct enactment, but by *tradition*, to engage in some higher form of effort, some special study, in which their reputation shall ultimately inhere, and which will stimulate them to progress and to keep some degree of touch with the advance of mankind.

The necessity of an administration of each branch of education that is thoroughly liberal in spirit, that aims not at mechanical uniformity, but rather at stimulating each teacher and class of teacher to put forth effort in whatever direction his taste and genius lie, is unambiguous. This is characteristic of continental method, which is excellent.

Every teacher of a continental secondary school aims at something besides teaching, viz., at being a specialist in some branches of knowledge, and in many cases a real contributor thereto. In many countries it is practically impossible to hold any high scholastic position, or to direct any great educational institution, without having been a serious contributor to the higher branches of knowledge; and in the higher offices the personal contribution must be of an eminent character. To this fact must be ascribed the inspiring influence of the higher pædagogues.

21. *Scope of Study of Advanced Education.*—What has been outlined reveals how widely varied are the subjects which demand consideration in any comprehensive review of secondary, technical, and higher education. Not only have the various schools to be discussed, but also all questions touching their necessity, their mutual relations, their curricula, their equipments, the scheme of professional education for their teachers, the mode of maintaining the efficiency of the teaching staff, both as regards its technical elements and as regards liberal outlook. Further, the whole question of spirit and discipline, of the reaction of the régime on the student, the relations of student and teacher, and matters appertaining to each and all of these questions, demand treatment.

22. *Classes of Schools to be studied.*—The following will give an idea of the classes of schools that must necessarily be referred to in any complete examination of education:—

Primary Schools, Preparatory Schools for Secondary Education.	10	From 10 to 14, pupils who do not wish to qualify for secondary education would not take languages. Science subjects and their own language would be of greater value.
Higher Primary Schools and Higher Preparatory Schools for Secondary Education.	12 – 14	
Schools for Secondary Education.		Continuation Schools. Schools for artisans. Trade Schools. Schools for the "Arts and Crafts." Lower Schools for the Decorative arts. Perfecting Schools. Apprentice Schools. Lower Commercial Schools. Lower Professional Schools. Lower Agricultural Schools. Special secondary education for the teaching profession.
Schools for Higher Secondary Education.	16	Higher-grade Continuation and Trade Schools. Intermediate Schools for the Decorative Arts. Intermediate Professional Schools. Intermediate Commercial Schools. Intermediate Agricultural Schools. Special secondary education for the teaching profession.
General Superior Education.	18	Higher Commercial Schools. Higher Agricultural Schools. Commercial education in Universities. Higher professional training of teachers. Superior Professional Schools and Polytechnica.
Universities, etc.		The various faculties of Universities.

This outline gives some idea of the extent of the subjects to be treated.

23. *Subjects demanding Special Consideration.*—The subjects demanding special consideration have to some extent been already reviewed, but may be again mentioned.

(1) The organisation, curricula, and equipment of secondary schools.
(2) The professional education of secondary teachers.
(3) The organisation, curricula, and equipments of Universities.
(4) The professional education of University teachers.
(5) The educational aspects of apprenticeship.
(6) The organisation, curricula, and equipments of trade, and similar schools.
(7) The organisation, curricula, and equipment of commercial, professional, and similar schools.
(8) The scheme of inter-relation between various classes of schools.
(9) The development and maintenance of sympathy with liberal culture.
(10) The unification of the entire educational system of any country.
(11) Relation of the educational system with the scheme of military and naval defence, and cognate matters.
(12) The path of progress in the higher educational institutions.

All these are weighty questions, and deserve treatment from the standpoint of a general review of the world's experience.

24. *General Questions.*—There are questions still outside of these, of considerable moment for our educational systems such, for example, as the attitude of those who are engaged in practical industry and commerce, to the educational institutions of the State. It is indeed a healthy and hopeful sign when the various corporations of a country take direct interest in its educational matters; when, for example, the the Chambers of Commerce interest themselves in the question of commercial education (as is the case in Sydney), when agricultural societies directly promote the cause of efficient agricultural teaching, when industrial corporations, or the proprietors of great manufacturing works, help instead of hinder the acquirement of a thorough education in the practical branches of engineering, and a knowledge of industrial processes.

With every accession of interest in equipping a people for their life-work the task of improving educational institutions becomes more easy, and with the appreciation of the increasing benefits, the hope of reaching an ideal system strengthens and developes.

The aim of the following chapters will be to offer, as far as opportunity will allow, something from the educational experience of the world, some picture which will help to form our ideal, and indicate what in the view of the Commissioners should be the aim-point of a complete educational system.

An endeavour will also be made to outline the development which must take place if our existing institutions are ultimately to offer the same educational advantages as those in other parts of the world. As before, this involves development both in equipment and organisation, and, perhaps, the most fundamental element will again be more thorough professional training for teachers.

25. *Conclusion.*—The educational principles, outlined in Chapter III of the Interim Report, apply with the same force to secondary and higher education. As previously pointed out, the knowledge of the teacher becomes increasingly important as education becomes more and more advanced; and on the other hand excellence in the art of teaching becomes less imperative since the student himself has, under a good system, acquired some skill in the art of learning and is becoming increasingly independent of the teacher's dexterity in teaching. The problem of thoroughly organising our educational system, a *sine qua non* if education here is to be equal to that provided by the best systems in other parts of the world, involves the following elements, viz.:—

(1) A well-defined ideal system, which must mark the aim-point and be the guide of our future effort.
(2) A clear recognition of what this involves in the way of material organisation and personnel.
(3) The unification of all educational machinery and effort.

CHAPTER III.

CHAPTER III.

The Place of Latin and Greek in Secondary Education.

G. H. KNIBBS.

1. *Introduction.*—In Chapter II hereinbefore, sections 9, 10, 12–14, certain considerations are outlined in regard to the co-ordination of secondary education, indicating that a definite opinion must be reached as to *whether Latin is or is not to be an obligatory subject* in all such forms of secondary education as are intended to lead on to higher education. Certainly every country that has a definitely organised system has been compelled to give this matter serious attention.

The similar question in regard to *Greek* need not be raised, inasmuch as attempts to make it an *obligatory* subject have everywhere been practically abandoned. Greek and also Latin are, of course, *obligatory for certain careers*, and probably no person who has investigated the necessity or desirability of such insistence would raise any objection thereto.

Discussing the place which Latin and Greek should have in the general scheme for secondary education, there are two questions which should be kept separate, viz.:—

(i) Should the study of these languages be optional or compulsory?
(ii) Is the character of the study or teaching of these languages such as calls for marked improvement?

The two questions are not mutually exclusive. It may reasonably be held that a subject ought to be excellently taught, and yet remain optional. It ought also to be recognised that subjects may be regarded as of very high value, and yet one may hesitate to give them that *unique* position which is implied in making them compulsory for all careers.

Probably anyone who will give the subject careful but dispassionate consideration, will recognise that it would be a *misfortune* if the schools of the State do not afford pupils the opportunity of learning ancient languages well.

The Commissioner here writing believes that the normal demand for good teaching in these languages is very far from being met by the best scholastic institutions of the State. It is unquestionable that school-boys in Europe learn their Latin and Greek better than they do with us.

It is one thing to hold that the teaching of languages, however, should be greatly improved, and another to hold that the study of one or several of them should be made *uniformly compulsory*. It is a serious thing to practically bar the doors of our highest educational institutions to those who fail to pass in some special language (other than the mother-tongue), and raises the question why so pre-eminent a place should be assigned to it, and why it should be constituted the sole obligatory language.

There are not wanting in educational circles, it may be said, those who are quite prepared to refuse to allow of graduation in a University, unless an examination in Latin is successfully undergone; in fact, that has been the practice in the University of our State. It is the practice of the Oxford, Cambridge, Wales, and Yale Universities. Any person may, of course, attend the University, and may present himself for its various examinations; he may receive the benefits of its teaching, and may work in its laboratories; but to matriculate, so as to become a *regular student*, the candidate must pass in Latin. In one case the student receives certificates of having passed examinations; in the other, he *graduates*, and it is only by graduation that he can enjoy the full privileges of membership of the University.

The question that has been raised in almost every country is, whether the circumstances of the modern world have not so changed as to indicate the desirability of *declining in future to accord to Latin this unique position*. Speaking of Greek in relation to general education, and in relation to foreign languages, the late Prince Bismarck is alleged to have said, "Russian is a better mental discipline, and is far more useful." That modern languages are more directly *useful* than Latin or Greek probably few would deny. But immediate utility is not the only ground for a careful review of the whole question. The enormous amount of new material which modern research has brought to light, not only in regard to the developments of science, but in regard to civilisations ante-dating those of Greece and Rome, have made it a question whether it will be wise or even possible to compel all persons who wish to be well educated, to devote sufficient time to the study of the Latin language to ensure some facility of expression therein. There can be no doubt that, for certain purposes, science and some of the modern languages are quite as disciplinary, and as has been said, far more useful.[1]

The question has also been raised as to how far we should try to force the pupil to fit the prescribed educational courses, or how far we should endeavour to make the courses meet the requirements and natural aptitudes of the pupil. That has led in America to the advocacy of what is known as the scheme of election in studies, which scheme not only applies to University courses, but also, in a lesser degree, to secondary school work.

Speaking at the great conference of 35,000 teachers in Boston in July last year, President Eliot, of Harvard, of whose eminence in the ranks of cultured and liberal-minded Americans it would be an impertinence to speak, said:—

"A cultivated man should express himself by tongue or pen with some accuracy and elegance; therefore, linguistic training has had great importance in the idea of cultivation. *The conditions of the educated world have, however, changed so profoundly since the revival of learning in Italy*, that our inherited ideas

[1] There is some controversy as to the disciplinary value of languages; this will be referred to later.

ideas concerning training in language and literature have required large modifications. . . . . The linguistic and literary element in cultivation abides, but has become vastly broader than formerly; so broad, indeed, that selection among its various fields is forced upon every educated youth. . . . . Here is a profound modification of the idea of cultivation, which the nineteenth century has brought about. *What portion or portions of the infinite human store are most proper to the cultivated man?* The answer must be—Those which enable him, with his individual personal qualities, to deal best and sympathise best with Nature and with other human beings. . . . . Courses of study should be fitted to the pupil and not the pupil to the courses."

It will be perceived that the principle underlying these remarks at once raises the question whether we should maintain the traditions of the Middle Ages, when Latin was essential to a cultured man, and was the every-day language of learned men in almost all European countries. *Is it of such unique importance that it should take higher academic rank than any modern language, than Greek, or than any science?* Is it one of those "portions of the infinite human store" of things-to-be-known, which must for ever be forced upon those who wish to regularly enter higher institutions of learning, but who have neither aptitude in this language, nor any sincere liking for it? That is really the problem which our educational system must face. And it is, of course, not a sufficient answer to say that some few Universities of the world, however eminent, maintain closed doors against those who do not qualify by a knowledge of Latin.

It seems hardly necessary to affirm that no cultivated man has any doubt as to the immense value of both Greek and Latin, and, indeed, any ancient language, as means of intensifying the appreciation of one's own language, enriching one's knowledge of it, and augmenting one's power in using it. The discipline of learning *any* foreign language is a discipline of high value, and no insignificant part of its office is, that it tends to correct that "fatal facility for words" which often substitutes verbal expression for significant thought, and loses sight of the essential function of language, in an excessive regard for its mere *form*. Some of the practical and cultural advantages of the study of languages, and some slight idea of its general function, have been outlined in Chapter XXII of the Interim Report, pp. 197–211; see, in particular, sections 1–4, 9, 18, 21, and 22. Here it may be added, that in discussing the whole question, what may be called the higher function of language is never (intentionally) forgotten. The issue is not whether the study of such and such a language is important, but whether, on impartially reviewing the area that must necessarily be covered by secondary education worthy of the name, any particular language should be singled out from all others and made absolutely obligatory, and as *Latin* is the only language that has been so honoured, the question really turns upon it alone. There can, of course, be no doubt that the study of one's mother-tongue should be obligatory.

Comment as to the *necessity of providing for the study of both Greek and Latin* for such pupils as wish to take these subjects in their career in secondary education might be viewed as superfluous. It is really otherwise. In a young and comparatively undeveloped country, the attention of the people is so strongly directed to the effort to establish themselves therein, that the necessity of maintaining culture in its highest forms is by no means as apparent as might be desired. Owing also to the fact that persons who have given the subject no mature consideration are sometimes apt to discount as unpractical all forms of education that do not *appear* to directly promote the acquisition of wealth, it becomes the more necessary to disarm the spirit of antagonism which is sometimes shewn in regard to provisions made for the learning of these languages. Admitting, for the sake of argument, that all insistence on either Greek or Latin, or both, as obligatory in secondary education, has been absolutely abandoned, it would still be *calamitous* if no adequate provision were made for their teaching. If, therefore, the State intends to include secondary education in its programme—it has already taken a step in that direction by creating "Superior Public Schools"[1] and "High Schools"—it follows that it cannot stop short of making every necessary provision for teaching Latin and Greek *in the most efficient manner possible*.[2]

A word or two may be added as to the somewhat prevalent notion that the teaching of these languages, from the standpoint of State education, is a work of *supererogation*. There is no doubt whatever, that in a community, numerically, not very strongly tinctured with what is known as liberal culture, there is apt to be a majority who fail to estimate the various elements of higher education at their proper worth. It is a matter of common observation that persons who, without educational advantages, nevertheless acquire wealth, are apt to imagine that their careers have been distinguished by *success*—success with them connoting only the acquisition of money and certain forms of power associated therewith. Cultivated peoples, on the other hand, recognise the narrowness and danger of such an outlook; and they perceive also that these great limitations, which hinder, even if they do not prevent, the perception of the higher elements of culture as really existent, make the guidance of the uncultivated in matters of educational policy and educational organisation of worse than doubtful value. Such guidance may even be positively injurious. Its great danger is the arising of that complacency and confidence which so easily assert themselves when there is no knowledge to oppose or to warn.

A judicial inquiry as to what should constitute the normal attitude to the question of the place of Latin and Greek in secondary education involves, on the one hand, a refusal to be governed by the traditions and instincts of those purely "practical" persons who can see no other aim in life than the accumulation of wealth, the development of physical comfort, or material power. At the same time it equally involves a refusal to be led by those who desire to form a cult based upon a knowledge of some particular language. The latter, either overtly or secretly, regard with disdain all persons who have not qualified themselves by learning this or that particular language, and the former are blind to the existence of things of high moment to the human race.

The pedantry of mere scholasticism, on the one hand, and incapacity to recognise the higher function of linguistic studies on the other, are the Scylla and Charybdis to be avoided in reviewing the question now before us.

In discussing Latin, it will not be inopportune to refer occasionally to the other classic language usually read, viz., Greek.

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[1] These are really only primary schools, in the Continental sense.

[2] It need hardly be pointed out that State schools in a democratic country should not be regarded as of lower grade than private schools.

2. *The function of Latin and Greek.*—It may at once be conceded that in the opinion of all persons qualified to judge, the classical languages are cultural in a very high degree, and if not absolutely requisite as general aids in certain studies, they are at least very desirable. There is abundant testimony also that with many pupils[1] the mental discipline in the study of these languages is excellent for all purposes.

It will at once be recognised that, as they stand at present, law and medicine, at least, demand a knowledge of Latin, and preferably also of Greek; theology, of both. Whether the time will ever come when these subjects may be efficiently studied without recourse to ancient languages is a question that will suggest itself at once in any attempt to forcast the trend of the future. Such questions, however, may be left unconsidered as being at present of small moment. With things as they stand to-day, it is clear that secondary-educational schemes, with any pretension to thoroughness, cannot possibly ignore the necessity of providing at least for the *optional* study of these languages.

In regard to the wider question of the inclusion of languages generally, that has been sufficiently discussed in the Interim Report (Chap. XXII). It has been shewn that the experience of countries where languages are really well-taught is that, whether ancient or modern, they should be acquired as *living* languages, and not by the method of learning grammar and accidence, and attempting initially to translate. The latter rarely leads to a commanding knowledge of language, and then only with great labour; the former method is as easy as learning one's mother-tongue. And it is well to remember that the great difficulty of obtaining good results in Latin and Greek is not inevitable, but only a concomitant of our present unwise methods of teaching. A change of method will make these languages relatively easy, and save a great deal of the pupil's time. This is not a fanciful theory, but the deliverance of teachers in regard to whose erudition and experience there can be no shadow of doubt.

The difficulty of learning the classic languages as they are at present taught in the schools of this State, and the wide-spread distaste for their study, ought not therefore to be allowed weight in deciding the question as to the propriety of their inclusion in the curricula of secondary schools.[2] The main questions are whether their function is sufficiently important to justify the State in making provision for their efficient teaching, and whether every pupil in secondary schools should be required to study them.

It is not unimportant to remember that there is testimony of great weight that the classical training has high cultural value. Such testimony has been given by men whose eminence in and devotion to science gives some degree of assurance that they are at least not unduly prejudiced in favour of classics. Professor Sir William Ramsay, LL.D., F.R.S., and Professor A. W. Hofmann, may be cited among the number. The latter, whose eminence as a chemist is world-wide, expressed his views on the subject of Latin and Greek being included in higher secondary education in the following terms, in an address delivered in the Aula of the University of Berlin, on 15th October, 1880:—

"The total result of this great investigation cannot be a moment in doubt, and may be briefly summed up as follows:—That the Realschule of the first rank, whatever generous acknowledgment may be due to what it has actually accomplished, is nevertheless incapable of furnishing a preparation for academic studies equal to that offered by the Gymnasium; that the Realschule lacks a central point about which all other branches may group themselves, *while the Gymnasium possesses such a point in the classical languages; that all efforts to find a substitute for the classical languages, whether in mathematics, in the modern languages, or in the natural sciences, have been hitherto unsuccessful;* that after long and vain search, we must always come back finally to the result of centuries of experience; that *the surest instrument that can be used in training the mind of youth is given us in the study of the languages, the literature, and the works of art of classical antiquity*[3]."

Since Professor Hofmann so expressed himself, the whole question has been thrashed out in Germany with characteristic German thoroughness, and Hofmann's views, and Liebig's, also, which were somewhat similarly expressed, have not been overlooked in the controversy.

Professor A. Waldeck (Corbach) points out in his article on "Der Unterricht in Lateinischen" (Instruction in Latin), that until the eighteenth century was well advanced Latin was really a living language for the Church and for science, while in diplomatic and similar circles French held the place of honor. Latin was then learnt for *practical* reasons—as, indeed, it often is by pædagogues at the present time—and, as Waldeck remarks, the time devoted to it could be defended on the ground of its *utility*. In reviewing the time devoted to the study of Latin, a just appreciation of its claims requires it to be remembered that its literature was the *source of information* for which one now would turn to the vernacular.[4] This is a point to which reference will again be made.

The method of learning was to *read*, *write*, and *speak* the language, so that some facility was obtained in its use, and the knowledge of it was *real*.[5] What has been called the "*Neuhumanismus*" has brought about changes of opinion. The reading of Latin authors was because of their "Humanity" content; they were the repository of what was necessary for general education.

It must not be supposed that, even in Germany, Latinity was without able opponents. The "*Latinitätsdressur*" (Latin drill) was strongly stigmatised by Johann Gottfried Herder[6] as a poisoning of one's whole life,[7] and the imitation of Latin as a hindrance to the mastery of one's mother-tongue. Others recognised that it had a special function, among whom may be cited Friedrich August Wolf,[8] the founder of the science of Philology. The school of Locke and Rousseau sought to make teaching more modern

[1] As usually taught this is somewhat modified. Where pupils have an inveterate antipathy, the result of forcing is probably injurious.

[2] In the Interim Report reference has been made to improved methods of teaching languages. Reference may be made to the "Special Reports on Educational Subjects. Vol. 8. On newer methods in the teaching of Latin," by E. A. Sonnenschein, pp. 595-604. London, 1902.

[3] "The German Universities For The Last 50 Years," by Prof. Dr. J. Conrad. Translated from the German by J. Hutchison. Quoted from the Appendix, Note 13, pp. 222-224, "On the inter-relations of the Higher Schools, the Universities, and the Professions in Germany." ("The Classical Controversy.") The italics are in the original. The Commissioner has not been able to lay his hand upon the German original, and is indebted to his colleague, Prof. M. W. MacCallum for the reference.

[4] Prof. Waldeck's words are as follows:—"Bis in das 18 Jahrhundert hinein hatte das Lateinische die Bedeutung einer gleichsam lebenden Universalsprache für die Kirche, die gesamte Wissenschaft und für die Politik, ehe sie auf diesem Felde durch das Französiche verdrängt wurde; fast alles, was auf dem Gebiete des höheren geistigen Lebens lag, trug das lateinische Gewand und war nur durch das Medium dieser Sprache erreichbar. Mit ihrer Erlernung verfolgte man also in ganz hervorragendem Masse praktische, oder wie es jetzt heisst, Utilitätszwecke." Die Reform des höheren Schulwesens in Preussen. Herausg. von W. Lexis. Halle a S., 1902, p. 137.

[5] Thus Prof. Waldeck:—"Man erlernte sie auch von Anfang an lesend, schreibend und sprechend—*nulla dies sine linea*—so dass schliesslich eine leidliche Fertigkeit im Gebrauch derselben schon zu erreichen war."—*Ibid.*

[6] Herder's period was [1744–1803].

[7] "Ein Gift auf Lebenszeit."

[8] [1759–1824.]

modern and human, but at some sacrifice, perhaps, of rigour in mental discipline. This was opposed by Wolf, who, defining philology as a "knowledge of human nature as exhibited in antiquity," made it dependent upon the interpretation of historic and linguistic facts as a whole. Although Wolf threw the weight of his genius and influence against the modernising tendency, yet he explained that Latin writing was a matter only for those who desired to go deeply into the matter of language—*i.e.*, philologists.

In considering in Germany the significance and place of Latin in future secondary education, it has been pointed out in unmistakeable terms that the necessities of particular careers is not the point at issue.

Professor W. Lexis, of Göttingen, in discussing the adjustment of University studies in general, remarks that formerly—viz., in the "*Humanismus*" period—the ancient languages had a very definite and real significance, which they do not now possess. Latin was the language of the learned of all nations, and Greek was a mine of realistic knowledge in mathematics, natural science, and medicine.

Reference has been made to the opinions of Professor Hofmann, and to Justus Liebig. While Liebig in one place of his "Chemischen Briefen" says that he "has frequently found that students of good Gymnasien soon surpass those from industrial and polytechnical schools, even though the latter are to the former as giants to pigmies," yet in other places he advocates a scientific training, and condemns the existing Gymnasium as unsatisfactory; and Hofmann's dictum was oblivious of the fact that some of his best assistants were actually "*Realarbiturienten*," *i.e.*, pupils who did not respond to his theoretical acquirements, and whose careers did not support his verdict.

The whole question needs to be reviewed in the light of the extensions of modern knowledge. Even granting that the majority of those who pass through the classical Gymnasia ultimately acquit themselves more creditably than those who pass through the Realgymnasien or Oberrealschulen, it does not necessarily warrant the *exclusion* of the Greekless, Latinless student from the higher forms of education.[1]

In connection with the German view of the function of classics and its normal place, Chapter XIX herein should be read, and more especially sections 2, 3, 4, 5, 8, and 18. The essence of recent educational changes in Germany is the recognition that a Greek-Latin curriculum, a Latin-modern-language-science curriculum, and a science-and-two-modern-languages curriculum are of equal academic worth.

Instead of representing modern literature and modern developments of science as hostile to classics, what is needed is a recognition that the appreciation of Greek and Latin by those who have been eminent therein, is an evidence of the value of those languages, and that a more liberal attitude to all forms of culture is to be desired.

The formation of the Classical Association of England and Wales, in admitted alarm at the "real danger" of classical studies being "absolutely excluded from any part in the education of the country,"[2] is an evidence that the eminent men who constitute that association most firmly believe in the value of classical studies. It is, of course, true also that the temper of the Association, so far as could be judged from the report, is to allow no entrance to University careers without Greek and Latin, and the implication of some of the speeches is that any concession which would permit of modern languages being substituted for ancient, would be followed by a complete abandonment of the latter. This, however, betrays a lack of confidence in regard to allowing ancient languages to come into competition with other branches of human knowledge.

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[1] "Im übrigen ist auch mit Rücksicht auf den Utilitarismus der Gegenwart darauf hinzuweisen, dass die alten Sprachen im Zeitalter des Humanismus eine sehr realistiche Bedeutung hatten, von der ihnen heute nicht viel mehr übrig geblieben ist. Das Latein war damals—und noch lange nachher—die internationale Gelehrtensprache; die griechische Literatur aber war in ihrem wissenschaftlichen Teil auch eine Hauptfundgrube für realistiche Kenntnisse in Mathematik, Naturwissenschaften und Medizin. Diese Bedeutung hat sie heute verloren, denn die Leistungen der Griechen in diesen Wissenchaften haben zwar ein hohes Interesse für die Kulturgeschichte und die Entwicklungsgeschichte des menschlichen Geistes, aber sachlich besteht für den heutigen Forscher keinerlei Anlass, auf sie zurückzugehen. Die moderne wissenschaftliche Naturanschauung ist von der griechischen durchaus verschieden. Dem steht auch nicht entgegen, dass Aristarch von Samos die Bewegung der Erde geahnt hat, ein geniales Aperçu, das aber weder bei Hipparch noch bei Ptolemäus Widerhall gefunden hat.

"Dem Gymnasium ist bisher sehr wesentlich seine soziale Stellung zu statten gekommen. Auch diejenigen, die aus seinem Unterricht nur den dürftigsten Gewinn davongetragen haben, betrachten es meistens als einen gesellschaftlichen Vorzug, diese Schule durchlaufen zu haben. Die Gymnasialerziehung hat ja bisher den Berufen mit akademischer Bildung eine gemeinschaftliche Signatur gegeben und sie gilt daher als ein auszeichnendes Klassenmerkmal. Mit dieser in einer einflussreichen Gesellschaftsschicht verbreiteten Bevorzugung des Gymnasiums hängt aber andererseits auch das in ihr nicht weniger verbreitete Vorurteil gegen den Bildungsstand und die wissenschaftliche Leistungsfähigkeit der aus realistischen Anstalten hervorgegangenen Studierenden zusammen . . . . . .

"Zu diesen gehört insbesondere die Bemerkung Liebigs in seinen 'Chemischen Briefen,' *er habe häufig gefunden, dass Studierende von guten Gymnasien sehr bald die von Gewerbe-und Polytechnischen Schulen kommenden auch in den Naturwissenschaften weit zurücklassen, selbst wenn die letzteren anfangs im Wissen gegen die anderen sich wie Riesen gegen Zwerge verhielten.* Liebig selbst ist aber gerade ein schlagender Beweis dafür, dass man nicht nur ein grosser Chemiker, sondern auch ein hervorragender deutscher Schriftsteller werden kann, ohne mehr als dürftige Anfänge der Gymnasialbildung erhalten zu haben, denn er ging von Sekunda ab, um Apothekerlehrling zu werden, und dabei war er stets ein schlechter Gymnasiast, wie Griesbach in einer neureren Broschüre (Erwägungen über die juristischen Gutachten in betreff der Zulassung der Realgymnasialabiturienten, Berlin, 1900), aus den Akten des Darmstädter Gymnasiums nachgewiesen hat. Er kam Ostern, 1811, in die Quarta, wurde erst Ostern, 1813, als 23, unter 28 nach Tertia und erst im Herbst, 1815, als 17, unter 27 nach Sekunda versetzt. *Übrigens hat sich Liebig an anderen Stellen der Chemischen Briefe über das Gymnasium als höhere Bildungsanstalt ungünstig ausgesprochen und ein hauptsächlich auf den Naturwissenschaften beruhendes Unterrichts system befürwortet.*

"*Im Sinne jener Worte Liebigs hat sich au Hofmann in seiner Rektoratsrede (1880) geäussert. Er wusste aber nicht, dass einige seiner besten Assistenten Realabiturienten waren, und sein Fachgenosse Wislicenus erhob gegen sein Urteil entschiedenen Einspruch.*

"Bei allen solchen Vergleichungen vermisst man die richtige Erfassung der Kausalitätsverhältnisse. . .

"Soweit also die ungünstigen Urteile über die Leistungen der Realschüler im Vergleich mit den Gymnasianten eine tatsächliche Berechtigung hatten, darf man von der Gleichstellung der drei Anstaltsarten in Bezug auf die akademischen Studien eine Besserung erwarten, da sich nunmehr der Unterschied in der sozialen Zusammensetzung ihrer Schülerschaft mehr und meh verwischen werden.

"Die Berechtigung zum Universitatsstudium im allgemeinen," pp. 72-74. W. Lexis in "Die Reform des höheren Schulwesens in Preussen." 1902.

[2] See "The Classical Review," of February, 1904. Vol. XVIII, No. 1, p. 64.

3. *Recent Testimony as to the Teaching of Classics in Germany.*—Since the Commissioners visited Germany, an important testimony is to hand as to the modern teaching of classics in Germany by a competent witness.[1] While admitting freely that the tendency is to modernise the curricula, Mr. Cloudesley Brereton, the deponent referred to, states that "the advocates of little Latin and less Greek are more unlikely than ever to obtain" a respectful popular hearing. "No doubt," he says, "the old, dull, gerund-grinding methods of teaching classics . . . . . have much to answer for," but should not lead us to a wholesale condemnation of classics, a condemnation which, he says, "finds little sympathy among the mass of experts in France and Germany." Although both France and Germany are, "according to modern languages and science absolutely the same (academic and general) privileges as are attached to the three other courses," neither country has sacrificed "the just claims of classics."

Mr. Brereton recognises the advantages of retaining a common scheme of education till the age of 11 or 12, instead of specialising at 9, as heretofore.

Mr. Brereton says:—

"In Germany the chief aim seems to be mastery of the language, with a view to make the language itself an element of general culture. Hence, while the pupils are thoroughly well grounded in the grammar and syntax of the language, the amount of composition appears to be considerably less. Thus, in one of the *Gymnasien* of the old type, the statement was made that the pupils in the highest class only do two Greek compositions a term. Again, the greater part of the composition work consists of retranslation, more or less direct, into the Latin or Greek. Very seldom does the teacher set passages out of German authors for retranslation; in fact, in Greek this has only just been again allowed in the new programme of 1902. Verse composition is extinct, though in one or two universities the professor makes the students turn Juvenal into Greek verse, or Greek poetry into Latin verse; and in others the study of metric, such as that of Plautus, is carried to a high pitch."—(p. 173.)

The account of Mr. Brereton as to what was seen in the Reform schools in Latin is of interest. The age of the pupils was about 13½, the class was the *Obertertia*. They took Cæsar, Lib. IV, cap. I (unseen). The pupils "read a few lines in a clear and distinct voice, and then started translating literally, with little or no hesitation. There was no guessing at the general meaning, but the translation shewed that the pupil had a sure grasp of the structure of the language. Only once did the teacher suggest what word should be taken . . . . the performance was certainly remarkable. The pupils' range of vocabulary, both in Latin and German, was equally striking."

The remarks about Greek, also seen in a Reform school, are equally interesting, and worthy of our serious attention. In the *Untersecunda* a pupil read through a passage in Xenophon (about twenty lines of the Anabasis) with emphasis, and as if he understood it. The translations by the pupils were fluent. The answers in grammar were good—"extraordinarily good," says Mr. Brereton, "when one reflects that the class had been doing Greek for only two-thirds of a year." He goes on to say:—

"It seemed all the more wonderful when one learnt that the grammar is mainly studied incidentally at first, only those portions being learnt which bear on some point which occurs in the text. In some schools the class begins with a reader, but in this class the pupils had started straight away with Xenophon. The teacher began by reading and translating to them the opening sentences, and they had a vocabulary to help them to make out the sense. The chief aim, as the teacher explained, is to lead the pupils as soon as possible to an intelligent reading of an author. He held, with the editor of the text in use, that the boys who begin Greek at an older age than the boy in the ordinary *Gymnasium* needed a different treatment from the latter, and, above all, required a more substantial fare than is provided by detached sentences, or even detached pieces. As for grammar, that can be largely learnt out of the Xenophon as one goes along. The editor of the text-book in question gives an excellent scheme of how such an idea may be carried out in practice. The composition in the class partly consists in the writing out of accidence and very simple retranslation, which is gradually varied. The extreme liveliness of the class, and the obvious interest they took in the work, were not the least striking features in a remarkable lesson."—(p. 174.)

Touching method, Mr. Brereton states that all were convinced of the need of drill in grammar; and he recognised that the influence of what he calls the *direct method* in modern languages has shewn itself in some advocacy "in favour of the spoken word in Latin."

He concludes as follows:—

Doubtless we should not care to copy in all respects the German methods of teaching classics,[2] yet it is quite possible we ought with advantage to enlarge our own methods of teaching. But the important question is, can we venture to defer, as the Germans have done, the teaching of classics to a later date? If so, judging by the German example, not only education, but classics also, will be the gainers. The classical side is less likely to be overweighted with an unnecessary *ballast* of non-linguistic pupils, while those who start the subject at the later date should bring to it an eagerness to learn and an interest in their own progress which are the very "*vivida vis*" of all true education, and are, unhappily, all too uncommon among the bulk of English classical pupils.—(p. 175.)

4. *Ancient and Modern Languages.*—In considering the place of a classic language, the fact that modern languages cannot be ignored must also be kept in view; and also, that there is an obvious limit to the amount of linguistic study that may advantageously be attempted in school-life by the ordinary school-boy. Modern languages are the repository of the ever-increasing accumulations of modern science and technology; and no scientist nor technologist can hope to progress at a reasonable rate, or to keep touch with his subjects, unless he is acquainted with, at least, French and German, or, preferably, French, German, and Italian. The same remark is true of such fields as those of literature and philosophy. The wealth of pure, of scientific and of technological literature which is shut off from those who are unacquainted with modern languages can hardly be adequately realised by those who are not special readers in the fields indicated. It is this fact that has compelled *all* persons in all countries, who desire to maintain real touch with modern progress, to acquire some knowledge of modern languages. *It is, indeed, an elementary necessity of modern conditions of progress.*

In attempting to estimate the proper place for Latin (or Greek), it is quite evident that their relative value in comparison with modern languages must be considered. Since it is wholly impracticable for the majority of youths to learn Latin, Greek, French, and German, a choice must be made among them. Is there any reason then for assigning *Latin* a unique position?

The study of modern languages has been referred to by Professor Metchinkoff as an "*elementary necessity.*"[3] This is a view of the matter worthy of the very serious attention of educationists. The study of dead languages does not in a special way tend to bring the existing nations into closer touch. The study of modern languages, on the contrary, does so tend. Our bad feelings to other peoples arise almost wholly from ignorance of them. Racial

[1] Cloudesley Brereton, M.A., Licencié-ès-Lettres. See "The School World," May, 1904, pp. 172–175.

[2] The contributions of German scholars to textual criticism and to general classical research may be borne in mind in connection with this sentence.

[3] See later on in this section.

Racial competition may take the form either of generous emulation or of rancorous rivalry. The former tends to raise and ennoble national feeling, and to transform it by intensifying appreciation of and sympathy with other peoples, until it has become cosmopolitism. The latter engenders a depreciatory spirit and antipathy; it even creates a hatred of other nations for their very excellence; and it leads to national exclusiveness and insularity. The latter tends toward war and the former toward peace.

Anything that operates so as to promote the spirit of generous emulation and appreciation among different peoples—anything that helps to eliminate bitterness from rivalry—has a value for the nations and the world that can hardly be estimated; and any element of education that operates favourably in regard to this is of high importance, for it goes far to defeat those forces which promote war with its attendant loss and adverse consequences.

Apart from all consideration of the value of modern languages to those engaged in industry, commerce, science, and literature, there can be no doubt then that they have a special claim to consideration, being more efficient than the dead languages in eliminating that racial insularity so inimical to the general interests of the human race. It is a well-ascertained fact that linguistic knowledge tends to produce sympathy among peoples whose thoughts and aspirations become mutually better understood, and its recognition is the basis of certain movements of which the Anglo-French Association, known as "L'Entente Cordiale," may be taken as a type. The objects of that association are declared to be as follows:—

(i) D'entretenir et développer les relations personnelles et commerciales entre Anglais et Français.
(ii) D'encourager une connaissance plus générale de la langue française en Angleterre et de la langue anglaise en France.
(iii) D'amener les deux pays à se mieux enseigner sur toutes les questions affectant leurs intérêts réciproques.[1]

This movement is a rapidly extending one; it takes Englishmen to France and *vice versâ*; and the circle of personal friendship between the two nations is rapidly extending, and cordial feelings are widening their area in consequence. It is the hope of the leading men of the association that national friendship will be cemented by the friendly intercourse which it promotes.[2]

One of the great merits of the study of classics is, that the modern man is enabled to come into appreciative touch with the highest and most beautiful thoughts of the people of Greece and Rome, and in this way to understand how deeply modern civilisation is indebted thereto. Similarly, *a study of modern languages is essential to a real understanding of modern peoples.* Much of the ridiculous antipathy of vulgar minds to peoples of other nationality, much of the unreasoning hatred to our fellow-beings born under other skies and subject to other governments, has no better basis than a prejudice which is but the child of ignorance. While, therefore, it will be admitted by every competent critic, that a knowledge of classic languages, may broaden the mind, and that it tends to greatly enlarge the mental horizon, it is also certain that it does not *per se* compare with a knowledge of modern languages in combatting the maleficent effects of unreasoning racial dislike.

The great practical utility of modern languages, their literary advantages, and their cosmopolitical influence, indicate that their claim to consideration even in competition with Latin, is very great.[3] The question should of course be reviewed on the broadest grounds.

In this connection the following passage from a recent work by Elie Metchnikoff, a Professor at the Pasteur Institute, is of interest.[4] Referring to some remarks in lectures by Ostwald, a distinguished German chemist, at Leipzig,[5] to the effect that the circle of altruistic feeling should cover the family and nation, and that the demand that it should have still wider limits was merely theoretical, Professor Metchnikoff enters his protest in the following terms:—[6]

"Community of language unites the individuals of a nation, but the advance of civilisation has undermined the foundation of that source of differentiation. Naturally, when a number of men spoke only one and the same language, great solidarity was the result, as ideas spread only by language. But a monoglottism is not the end of human progress. As means of communication have improved the nations have been brought in contact with each other. *The knowledge of foreign languages is an elementary necessity of modern life.* And so the bonds of nationality will certainly become looser, in this respect following the bonds of family. *The dislike that we have to people whose language we do not understand, becomes changed into a feeling of unity with them as soon as we can understand them. In that respect an active development is in active progress, and we shall have to seek out some new principle on which to base international solidarity.*"

With the solution of this last matter we are not here concerned; the passages italicised reveal the European view expressed by a Russian *savant* living and scientifically occupied in France.

With these general considerations in mind, it will be proper to review the attitude of several countries to the question of the place of the dead languages, and Latin in particular.

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[1] In the English publication these are expressed as follows:—
(i) To maintain and perpetuate friendly social relations between the two peoples.
(ii) To promote friendly intercourse between the two peoples socially and commercially, and encourage a more general knowledge of the two languages.
(iii) To assist in making the two peoples better acquainted with the respective feelings and opinions of each other in all questions affecting their common interest.

[2] The Commissioner wishes to express his appreciative thanks to Mr. W. H. Sands, Barrister-at-Law, of 6, Fig-tree Court, Temple, E.C., London, the Honorary Secretary in London, for his kind introduction to M. Marcel Reymond, le Président du Comité de patronage des Etudiants étrangers, and to the latter gentleman for his kindness in supplying all necessary information as to the work of the "Entente Cordiale" and of the Comité de patronage.

[3] The sense of universal brotherhood which linguistic knowledge *tends* to establish is psychologically remarkable. This ready appreciation of what is good in other races, and generous sympathy with what is noble in their ideals, can be stimulated by a good method of history-teaching. Higher education and broader outlook help to perfect patriotism by raising it to the vastly higher plane of cosmopolitism. Ignorance tends to provincialism.

[4] The Nature of Man: Studies in Optimistic Philosophy, by Elie Metchinkoff. Engl. transl. by P. C. Mitchell, M.A. London; W. Heinemann: 1903, p. 297.

[5] Vorlesungen über Naturphilosophie. Leipzig, 1902.

[6] Loc. cit., p. 297.

5. *Hungarian View of the Position of Latin.*—Up to the middle of the 19th century among the cultivated classes and in official circles in Hungary, Latin was the language of ordinary conversation. As to the general literary and linguistic culture of the Hungarian also there can be no doubt. A competent authority refers to their young men, at 18 years of age, as "bildungswüthig," which may be translated as "possessed with a rage for education." Retentive of memory, vivid in imagination, poetic in temperament, and possessing great power of mental co-ordination, they at least represent in themselves some of the advantages that may be assumed to follow in the path of liberal classic culture. (Reference should be made to chapter XVI of the Interim Report, p. 159, sec. 4.)[1] Consequently Hungarian opinion as regards the normal place of Latin is valuable, and worthy of most careful consideration. What, however, is still more valuable is the trend of their opinion in regard to the normal character of secondary education and how far the dictum, that Latin should find an invariable place therein, is to govern us in this State.

Hungarian opinion also is valuable because, in reviewing the whole question, they have kept in mind the merits and demerits of a unitary scheme; and, further, the whole matter of the essentials of a good curriculum has been ably debated, and the Latin question is, in the Hungarian mind, but an element in a comprehensive effort to unify the whole scheme of secondary education.

The following is translated by the Commissioner from the official documents bearing upon the issue:—

"The unification of secondary teaching involves the whole question of intellectual development and education. When a child has learnt to 'read, write, and cypher,' he enters a school *which has for its aim the development of his mind and soul*, by bringing him into contact with that inexhaustible fountain of knowledge, which, acquired by the labours of long centuries, is available to the nations and to humanity.

"If the question be viewed in this aspect, it *becomes clear that there is no need for the plurality of types in secondary education.* Nothing, in fact, could be more extraordinary than to desire that those who later on are to constitute the higher classes of society, should receive different degrees of instruction and be unable, owing to marked inequality of their education, to converse fluently on this or that topic. It would be unreasonable to desire to artificially perpetuate differences which can serve only to weaken community of sentiment. *The extent of knowledge should be identical in all secondary schools*, for it is necessary to all. *In general culture, no one element is more important than another, they are important in the same degree.* All that is of doubtful value should be eliminated, and only that which is decisive and essential should be embraced."

It will be seen from this that in the Hungarian mind the plane of secondary education is essentially *cultural;* and here it ought to be borne in mind that the Hungarian is not neglectful in providing for the practical education of artisans and the callings which make no special demand on intellectual endowment.

The Hungarian view as to the necessity or otherwise of Latin is expressed in the following passage also translated from official documents:—

"Thus then, if it be true that the Latin language and literature are integral parts of general culture, knowledge of this language is indispensable to all those who have any pretension to being educated. *If, on the other hand, Latin be not regarded as an integral part of culture, it should be banished from the schools*, and remitted to education in the home. The same remark applies to all the other subjects."

"This clear conception of unified secondary schools already appeals to the numerous partisans in Hungary. *They agree more and more that that system of secondary schools which divides the various branches so that pupils are only qualified to follow different careers* (as for example, in the 'Athenées' of Belgium) *is far from the principle which must obtain in the unified secondary school.* Such a system of secondary education attacks at its very base the fundamental principle of intellectual development and of general culture."

This strong comment must not be supposed to be the vapouring of persons of narrow education and limited experience—it is the deliberately expressed opinion of a highly-educated gentleman of wide experience, voicing, be it noted, a wide-spread sentiment. The discussion proceeds;—

"Although there is already a reconciliation between the ideas which relate to such a conception of unified secondary education, there, nevertheless, exists a great divergence of opinion regarding the matter of that centralised and indispensable culture, concerning which each secondary school ought to be perfectly in agreement.

"*These divergences touch one fundamental question only—that is the question of Latin.* In Hungary, it might be said, the unified secondary school is determined by the place accorded to this language. As regards Greek, the law (XXX, of 1890) made the principle clear that in Hungary this language is not regarded as constituting an indispensable factor in general civilisation [culture?]. But it is quite otherwise in respect of Latin.

"The great majority of the intelligent classes of the nation is profoundly convinced that a knowledge of Latin in general, and particularly in Hungary, forms an integral part of the general culture; so much so, that quite recently it has been introduced into the 'Real' schools as an optional subject. And the law of 1883 (No. XXX), in affirming that no one may enter the faculty of Medicine or Law without a knowledge of Latin, leaves us to infer that without this language, and as regards general education, the 'Real' school is inferior to the Gymnasium."

To this it may be added that, until the middle of the 19th century, Latin was, in Hungary, the language of the cultivated classes and the "official language; and the whole past of the national civilisation was richly adorned with Latin elements." "From

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[1] Dr. Reich's testimony in regard to the relative merits of Hungarian and English education is extremely valuable, forasmuch as he is either impartial or, if he has any prejudices at all, it is certainly not unduly in favour of his own country. The following extract from his letter referred to in the "Interim Report" will bear this out. He says:—

"You will, I trust, not think me rude in giving such unguarded expression to my disapproval of the Hungarian system of education, which, in your report, appears in such a favourable light. Undoubtedly, *the British system undervalues the cultivation of the intellectual forces somewhat too much; in fact, the British youth is brought up in habitual contempt for method, for generalisations, theories, aperçus, and for everything outside politics, religion, business or sports. This, it may be submitted, ought not any longer to be tolerated, considering that the above equipments of the modern scientific spirit have been eagerly adopted by most civilised nations, and, if persistently neglected, must cause England to lag behind her numerous rivals.* On the other hand, I cannot refrain from warning my countrymen that their system in creating, as it does, a crowd of top-heavy *literati*, must inevitably prove abortive in the ever-increasing struggle of nations."

"From what precedes it will be seen that the number of those who are opposed to the introduction of Latin in the unified secondary school is (necessarily) small; and what is more, even the majority of these few opponents concede that, in the four higher classes of the future unified school, Latin should be taught during a limited number of hours, so as to constitute a basis for the study of the professional sciences.

"What will be the transition from the old to the new system cannot be predicted; for, while the major part of competent public opinion is in favour of the reform beginning with the Gymnasium itself, and of the present 'Real' schools being organised on the model of the transformed Gymnasium itself; others, on the contrary, think that a good method of solving the question would be merely to make Latin obligatory in the 'Real' schools."

It will be seen hereinafter that the German nation has attempted a solution of this question, and one which has already been suggested, viz., in chap. II, secs. 12-14 herein.

The question of Greek as an essential element of secondary education is not one of great importance. The struggle of its partisans to force it upon all who desired to enter into the fields of higher education has been abandoned. It now has its normal place as an *optional* subject.

In Hungary, Count Csáky, as soon as he entered office as Minister of Public Instruction, annulled the obligation to take Greek (by the law of 1890), and he also reduced the work in the secondary school. Two years after he convened a great commission of inquiry, which deliberated at length on all the details of the question. This Commission, however, failed to come to an agreement on several points. The Minister stated that the members of the Commission, with but few dissentients, were of the opinion that *in future secondary schools Latin should be an obligatory subject* in all classes. No voice was raised against the equality of the right of admission to the higher schools; whoever discharges his secondary studies well will have admission to all the faculties.

The following year the "Higher Council of Teaching" began to draft a programme of studies for these schools; but Count Csáky having resigned in 1894, the work was suspended and the Council dissolved by the new Minister of Public Instruction, Baron L. Eötvös.

At the beginning of the year 1895 M. Wlassics was nominated Minister of Public Instruction. In his first prominent address—the discussion of the budget of his department being then uppermost—he broached, without entering into particulars, the question of the unification of the secondary schools. "*I am convinced*," said he, "*that the reform of our secondary schools, recognised as necessary, will give birth to the unification of such schools. This is why even partial reforms should be made with a view to that end.* But I am also of opinion that the elements of culture and the tendency of the end of the century are not sufficiently well-defined to perfect that reform which is essential for the benefit of the secondary schools of to-day."

In 1896, the year of the millenary Exhibition, a national congress of pædagogues took up the suspended delibreations.

There is no doubt that the decree of M. Wlassics, issued in December, 1898, was based upon the deliberations of this National Congress. In this he traced the outline of the unitary schools of the future, and he invited a revision of the curriculum; nevertheless he adhered in the main to the notions of Count Csáky, excepting that he perhaps a little more definitely recognised the advantage of basing the unity of the secondary schools more upon the practical necessities of life. He strongly affirmed, also, the importance of equality of right as regards admission to the higher schools (*i.e.*, Universities and Polytechnica).

"I am thoroughly persuaded," said the Minister, "that, in the education of the higher classes of society, nothing should be neglected in the inculcation of that essential and proper knowledge which should bring them into complete touch with one another. I believe that, in order to make identity of [academic] right possible, it is *not* necessary that the group of subjects, even down to their most minute details, should be identical, nor is it essential that the programme of studies of all secondary schools should be the same. On the contrary, I entertain the opinion that, while conforming to the common elements necessary within the limits above indicated, nothing in our secondary schools should hinder that variety demanded by local conditions.[1] Thus, then, *I have viewed the reform under discussion from the point of view of unity* as regards the right of admission [to the privileges of higher education], while *permitting a certain latitude in other branches of instruction.*"

In reviewing the whole question, the official document here translated runs somewhat as follows:—

"Taking account of school administration and practical application, the following is the meaning which, we believe, should be attached to this extract from the Minister's speech above quoted. Outside the group of common elements in the curriculum, viz., those subjects which are obligatory upon all pupils, there should be freedom to introduce, according to need, other subjects, the neglect of which, however, should in no way prejudice the right of admission to the University. *This right of admission should be guaranteed by the unitary group of essential subjects.* Everything else should be deemed accessory. Thus, for example, in the three secondary schools related to one another, *Hungarian, Latin, history, mathematics, physics, etc., should be obligatory*, while, at the same time, one might have courses in Greek, another in French, and a third in descriptive geometry," which, however, would be optional.

It was this decree that the Minister brought into relief, in connection with the budget of 1897, for the purpose of attracting the attention of pædagogic circles. It has been made the foundation of the subsequent deliberations in the domain of pædagogy; but the creation of a secondary school upon the unitary principle has not yet, however, been realised.

The foregoing will shew that the general characteristic of present Hungarian view is that *Latin ought to be considered as constituting an integral part of general culture*, and that it should form an obligatory element in secondary education. There are of course dissentients. But there is little doubt that the great majority of Hungarian educated people regard the "Realschool," with two modern foreign languages substituted for Latin and Greek, as distinctly inferior to the Gymnasium, though Latin alone be taken in this latter institution. In any review of Hungarian opinion on this matter, and in any attempt to understand its significance, one has to remember how recently it was that Latin was a spoken language among all educated Hungarian people, and one has therefore to regard rather the *trend* than the present state of Hungarian opinion. Recently, it is true, the idea of unifying secondary education has accentuated the demand for Latin, but has perhaps shewn no sufficient reason for its being regarded as *obligatory*. One sees that while the value of Hungarian opinion as to the importance of Latin is in no way challenged,

[1] This expresses the principle which is strongly asserting itself in America among other places.

challenged, even Hungary's own experience confirms the modern tendency to eliminate Greek and Latin as *obligatory* subjects, and to bracket them equal with modern languages. The point is not whether these languages are of value, but whether they are entitled to the *unique* position accorded them in the past, and it is to be remembered that even in the present day, in some parts of the British Empire a student is absolutely debarred from the regular forms of higher education unless he possesses a knowledge of at least Latin, the state of the student's general culture outside these languages being treated as if it were of relatively small moment.

There can be little doubt that the Hungarian preference for Latin is a last flicker of that former view of academic life which looked with disdainful eyes upon all forms of human development not directly associated with what was believed to be the only real form of culture—a knowledge of the languages of Greece and Rome, and in the case of Hungary, the time when educated people used Latin freely is not sufficiently remote to allow of a thorough review of the question, unaffected by the bias of the atmosphere of existing Latinity.

6. *The German Attitude to the Question of Compulsory Latin.*—The recent educational history of Germany is extremely important as regards the place of Latin as an obligatory or optional element in secondary education, and as to the question whether it should be a *sine qua non* for those who desire to enter a University. It is important, because German secondary education has been exceptionally thorough, and if one must take account of the influence of *prejudice*, it certainly was in favour of Latinity. It is also interesting to note that the existing state of things has been as much due to the direct and personal influence of the present Emperor, as the general system of Prussia was due to Frederick the Great and to Frederick William III.

The great Latin schools or "Gymnasien" of Germany originally took account mainly of the needs of theologians and jurists. Up to the middle of the 18th century Latin was the language in which instruction was actually given. The Latin city-schools and Gymnasia were intended only for the higher strata of society, while the ordinary citizen required an education that took less account of mere classic erudition and more account of the urgent necessities of his life. And even the higher citizens and nobility found the Gymnasia little suited to their requirements, and hence arose the "*Realschulen*," the "*Ritterakademieen*," and the "*Pädagogien*," steadily during the last century, the consciousness has intensified that the *Gymnasium* of Germany had failed to meet the wants of important classes of the community, and had failed also to reflect in its curriculum the immense accessions of knowledge which have come in the fields of science and technology. The course in the "*Gymnasien*" was so arranged as to constitute it solely a preparation for the University. The general need of the middle and upper classes, and the necessity of taking account of the progress of technical knowledge, had not manifested themselves. We cast a brief glance over the trend of this part of German educational history.

At the close of the seven years' war, Frederick the Great interested himself in the question of popular education and its practical and literary necessities, and found, in Baron (Freiherr) von Zedlitz, Minister for Justice, the right man to direct the administration of Public Instruction (1771). *Zedlitz rejected the system of individual schools for particular professional callings*, and assigned as the function of the higher school the development of *a uniform system of education* for the intellect and character. Latin remained in its then existing condition, but Greek was strongly approved, and the time devoted to it was greatly increased. Passing over minor features of the educational activity of Germany and Prussia,[1] it was not until the movement toward unity in 1844 (due to the expansion and increase of the power of Germany) that any distinct indications of reform experiments in education appeared. In the following year (1849) the Kultusminister, von Ladenberg, summoned a provincial school conference. A suggestion for a unitary *Untergymnasium* with three classes and a three-years' course, *with Latin but without Greek*, was debated. This lower Gymnasium was to be the common path to the *Obergymnasium* and the *Realgymnasium*, each with three classes and a five-year course. Both were to lead on to the Universities and technical academies, but with the limitation that the *Realgymnasium* student should be restricted in the University to those studies for which neither of the dead languages are required. (There was also a German National Conference held at Frankfort (a/M) which influenced the trend of educational thought in Germany.) This project did not come into execution. A "new era" commenced in 1858 with the regency of the Prince of Prussia, afterwards King and Emperor William I. A decree of 1859[2] touching the instruction and examinations in Real and Higher Burgher schools (Real und höheren Bürgerschulen), divided the Realschools into those of the first and second order. The former had a nine-year course, including Latin as obligatory, and its maturity certificate (Reifezeugnis) was sufficient for all the higher professional callings that did not specifically demand a University education. The one-year certificate[3] (Einjährigen-Zeugnis) was granted as in the Gymnasium to those who completed the first half-year attendance in the "*Secunda*." In the Realschools of the second order, the leaving examination (Entlassungsprüfung) was necessary for the Einjährigen-Zeugnis, but not *Latin* any longer. Höhere Bürgerschulen were real-schools with less than six classes, counting the 1st and 2nd as one class.

In 1866 von Mühler had created various subject-groups, within the limits of which the higher school teachers could qualify, and his successor in 1872, Falk, called together a conference in October of the following year, to consider again the question of a more complete unification of secondary education. This tendency to unify has always shewn itself as a characteristic of methodical minds. Falk's first proposition was directed to ascertaining how far the national interest lay in the direction of unification, and whether, assuming it to be advantageous, this greater unity demanded that the present separation of higher education into the classic and "real" sides should be done away with, their organisations being then united in one and the same establishment.[4] Other questions were also involved with which we are not here specially interested. No voting decided the question, but it is worthy of remark that a recommendation was put forward by Director Ostendorf that *the preparatory course should not contain Latin*,

[1] For example, the regulation concerning the maturity examination (Reifeprüfungsordnung) of 1834, and the programmes (Lehrpläne) of 1837.

[2] Of the Minister von Bethmann Hollweg.

[3] Reducing compulsory military service to one year.

[4] Falk's inquiry was really as follows:—"Ist im nationale Interesse grösserer Einheit der Bildung darauf Bedacht zu nehmen, dass die jetzt vorhandene Trennung des höheren Unterrichts in eine gymnasiale und eine realistische Bildung beseitigt und beide Richtungen in einer und derselben Anstalt vereinigt werden?"

Latin and should be uniform.[1] French was recommended as the desirable modern language. In 1875, Hermann Bonitz under the Minister (Falk), entered upon the more active consideration of a reform in the German Gymnasium. Bonitz had collaborated with Franz Exner in some introductory remarks (Vorbemerkungen) regarding the scheme of 1849 on the organisation in the Austrian Gymnasia, and had *recognised the co-ordinate importance of the humanistic and scientific elements.* Bonitz's scheme for the programmes of the higher schools and regulations for the leaving examinations (Entlassungprüfungen) were subscribed to by the Minister (von Gossler) in 1882. The distinction between Gymnasium and Realschool became more definitive, and a fusion of the two was regarded as liable to prejudice the normal intellectual development rather than to assist it.

It is worthy of notice that Greek lost two hours and Latin nine; while French and Natural Science were increased four, History and Geography three, and Arithmetic and Mathematics two hours. Further, the commencement of Greek was postponed from Class IV to the Lower III (*Untertertia*).

The "*Realschule*" of the first order was approximated more closely to the Gymnasium, and then denominated "*Realgymnasium.*" For the lower division (Classes VI to IV), the programme of 1882 established an accord between the *Gymnasium* and *Realgymnasium*, so that as far as the "*Untertertia*" one could pass unhindered from one course to the other.

The Realschools of nine classes *without Latin* were now called "*Oberrealschulen*," while those of seven classes were "*Realschulen.*"

In December, 1890, a conference took place, the Emperor of Germany directly participating therein. In his opening speech, the fundamental idea expressed was that *the school had lost the necessary touch with real life, and must again acquire it.*

To understand the force of the German Emperor's remarks, it is necessary to recollect the intense prejudice in favour of Latin and Greek of the men trained in the *Gymnasien.* These men, too, held all the higher positions. A man unacquainted with Greek and Latin was, in their view, an *uneducated* man; and it must be admitted that the views of the German classic, who is nothing more than a classic, are not very dissimilar to those of many others in other countries. Such views are widely endorsed to-day, perhaps, most strongly by those who have serious acquaintance with other branches of knowledge.[2] The German Emperor did not believe that that spirit was healthy, nor did he believe it conduced to the national well-being. That the schools had taken no sufficient account into their curricula of the tremendous changes that science had produced in the modern world was obvious; and it was, he thought, clearly an error. Classical men could find no reason for reducing the time devoted to Greek and Latin. The Kaiser took up a decided position, and threw the weight of his personal influence on the side of those who recognised that the ability to read Greek and Latin could no longer be regarded as the only path of culture; that in respect of Latin it was not now the only vehicle of learning. In his speech the Emperor said:—

"*We must take the mother-tongue as the basis for the Gymnasium.*" ("Wer müssen als Grundlage für das Gymnasium das Deutsche nehmen.") And again, "*The vernacular element must be the middle point about which all else revolves.*" ("Der deutsche Aufsatz muss der Mittlepunkt sein, um den sich alles dreht.")

Bearing in mind the (excessively) long hours of study in German schools, and the evidence of overwork,[3] the following remarks are also important, for there can be no doubt that the learning of the dead languages in the ordinary way is very fatiguing:—

"It is desired that there should be a reduction of the number of hours devoted to science. The health of the pupils and the invigoration of their bodies needs greater care. The education of the heart and disposition, as well as the steeling of the moral fibre, demands as much care as the development of the intellectual power. The Gymnasia admit of an unhealthy crowding; from them proceed *an overplus of erudite people*, and a swarm of half-educated people. *A remedy for this would be achieved, if one were to enhance the attractiveness of the Realschools.*"[4] In closing, the Emperor said:—

"Gentlemen, men should look out on the world, not through spectacles but with their own eyes, and find pleasure in that which they have before them, their own Fatherland and its affairs. It is that in which you will now help."[5]

The work opened up by the December Conference of 1890 resulted in some reorganisation in 1892, and was completed in the June Conference of 1900. In the former, the Emperor had said:—"I believe that I have recognised the trend of the new spirit and of the closing years of this century; and I am resolved, as I have been in the grasping of social reforms, so also in respect of the education of our young people, to walk in that new path, which unconditionally we must tread."[6]

The Emperor's view that *obligatory* Latin and Greek must be for ever abandoned has a strong hold to-day on the German people, and the June conference of 1900 led to the decree of 26th November, 1900, which adapts education, so it is believed, more fully to the needs of the people.

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[1] It is well to remember that the question of the Realschool as against the classical school was widely and actively discussed. The central organ for those interested in matters pertaining to the progress of Realschools has existed since 1871. Since 1875, I think, there has also been an "*Allgemeine Deutsche Realschulmännerverein.*"

[2] No British "Public School" (where science in general, and chemistry in particular, are dubbed "Stinks") ever held the non-classical scholar in greater contempt, or endeavoured more strenuously to maintain the place of classics in general education, than does the German pro-classic of the rabid type.

[3] It is admitted on all hands that overwork is common. Nothing like one half of the students of the Gymnasien are successful at the final examination.

[4] "Die Gesundheit der Schüler und die Kräftigung des Körpers bedarf einer grösseren Fürsorge. Des Herzens—und Gemütsbildung sowie der Stählung des sittlichen Willens gebührt gleiche Beachtung wie der Entwicklung der Verstandeskräfte: Die Gymnasien leiden an einem ungesunden Zudrang, aus dem ein Ueberschuess von Leuten gelehrter Bildung und ein Schwarm von Halbgebildeten hervorgeht. Eine Abhilfe hierfür wird gewonnen werden, wenn man die Anziehungskraft der Realschulen erhöht."

[5] "Meine Herren, die Männer sollen nicht durch Brillen die Welt ansehen, sondern mit eigenen Augen, und Gefallen finden an dem, was sie vor sich haben, ihrem Vaterlande und seinen Einrichtungen. Dazu sollen Sie jetzt helfen!"

[6] "Ich glaube, erkannt zu haben, wohni der neue Geist und wohin das zu Ende gehende Jahrhundert zielen, und Ich bin entschlossen, so wie Ich bei dem Anfassen der sozialen Reformen gewesen bin, so auch hier in Bezug auf die Heranbildung unseres jungen Geschlechtes die neuen Bahnen zu beschreiten, die wir unbedingt beschreiten müssen."

This is significant. No one competently informed as to the real character of recent German progress can fail to recognise that it is due to the fine mental discipline which, whatever the defects of that system, is characteristic of their secondary school system, and to the extraordinary ability and activity in scientific research of the German people. Their antagonism to compulsory Latin is notable also, because if ever there were a country where the prejudice of long-established custom was likely to decide in favour of obligatory Latin, Germany is that very country.[1] The use of the language as the basis of a type of culture likely to aid in weeding-out mere ignorant self-assertion has been no less marked in Germany than in England. The type of man who regards offence against correct quantity as degrading almost beneath the plane of natural sympathy, and who believes a knowledge of Greek and Latin to be absolutely the only path to culture, is not less numerous in Deutschland than in England. Nevertheless the decision of Germany, as well as France, is that higher education shall be available even to those who ignore both Greek and Latin, and that decision has been accepted as a wise one, even by those who believed that the *intellectual discipline of those languages is of the highest rank.* This point should not be forgotten. The question is not whether Latin and Greek are the best languages for intellectual discipline, or for severe culture, but whether they should be compulsory.

7. The Attitude of Holland to Latin and Greek.—Shortly before the Commissioners' visit to Holland the special features of "Education in the Netherlands" were carefully inquired into by Mr. John C. Medd, and reported upon by that gentleman in the Special Reports on Educational subjects.[2] The Commissioners had the pleasure of meeting Mr. K. ten Bruggencate; to whom Mr. Medd, as well as the Commissioners, was largely indebted for information. On pp. 38–39 of Mr. Medd's report reference is made to the question of the place of classics. To understand the issue thoroughly, as it presents itself to the mind of educationists in the Netherlands, reference should be made to Chapter XXIV herein, and in particular to section 2, giving a brief historical sketch of the development of secondary education.[3]

Mr. Medd in the report referred to says:—

"The question has been hotly discussed *whether a classical education must still be held indispensable for all those who wish to obtain higher culture, or must be more or less sacrificed to the exigencies of modern science and society.* By introducing the distinction between the two classes of pupils the Legislature has tried to conciliate both views, and the compromise is not a success. In Dr. van Aalst's opinion, the system is altogether a mistake. Irrespective, moreover, of the future career of the pupils, *the value of the mental training, which the classics peculiarly afford, can hardly be exaggerated.* As Mr. ten Bruggencate aptly observed: "Though the pupils may forget their Latin and Greek, they will retain what makes the study of those languages so valuable, thus illustrating Lessing's well-known saying, 'Aus einem tüchtigen Philologen lässt sich alles machen.'"

It is a little remarkable that the dictum of Lessing should be quoted as fairly applicable to-day, for the conditions have so completely changed since Lessing's time. [1729–1781.] It seems often to be extremely difficult for those who are practically ignorant of science and technology to realise the necessity of some freedom of choice. That this is so is seen in Mr. Medd's continuing remarks, in which he expresses himself as follows:—

"Again:—The easy terms upon which pupils from the Higher Burgher Schools may obtain a certificate, entitling them to work for a doctor's degree in any of the faculties, tend to some depreciation of ancient literature. Some of these pupils, who are in possession of the final diploma from their school, can satisfy the examiners after one year's preparation in Latin and Greek. Such cases are rare, however, and would be impossible if any real knowledge of those languages were insisted upon."

Clearly, in Mr. Medd's view, no attainment in other directions can compensate for lack in the Greek and Latin languages.

It is freely admitted that the demand—a very real one—that every educated man in Holland shall speak French, German, and English operates to reduce the time that otherwise might be devoted to Greek and Latin in the classical school. On page 29 Mr. Medd says that while "the value of practical or technical instruction cannot, of course, be exaggerated . . . there is a danger in the Netherlands, *as elsewhere*, that the increasing demand for it may act prejudicially upon *general education which is the necessary antecedent to all successful specialisation.*" Consistently with this, Mr. Medd says that "the *more enlightened educationists* are agitating for new and distinct schools, at which general education alone shall be provided up to the age of 15 or 16, before there is any attempt to specialise. *Opinion is still undecided whether Latin should be obligatory in such schools*, and there is no immediate prospect of their establishment." It hardly needs pointing out that the question is, "what really constitutes *general* education?" Mr. Medd deems that the five years of study in the *Hoogere Burger Scholen* is not educationally comparable to the work in the Gymnasia, inasmuch as its curriculum "does not present such a *centrum* of study" as is to be found in the latter; but he none the less recognises their evident excellence, and, further, that "they offer just that degree of secondary education which is so much needed in England."

There is, however, no distinct evidence in Mr. Medd's criticism that he realised, what is patent to all who have any knowledge of the conditions on which modern progress depends, viz., that the "centrum" of modern education must be the *mother tongue, and that touch with the history, philosophy, literature, science, and technology of the present age is absolutely necessary;* that human thought, institutions, and effort as they stand to-day are no less important than are those of the past; in fact, that Latin and Greek would be without adequate support, except as subjects of quite special instruction (as Sanskrit, for example), unless it was clear that they had value for the human mind as it stands to-day.

As soon as one comes to deal with men who are personally contributing to the extension of human knowledge, the divergence of opinion in Holland is the same as elsewhere; that is to say, while the service which Latin and Greek can render is fully admitted, it is also recognised that these subjects cannot, under the pressure of a satisfactory curriculum, claim that place which could be allowed them when they were the unique instruments of intellectual culture.

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[1] Germany's pre-eminence in contributions to classical research is too well known to call for comment.

[2] See Supplement to Vol. 8, pp. 1–72.

[3] The actual programme in Greek and Latin appears in section 10 of the same chapter.

8. *Latin and Greek in Northern Europe.*—Speaking generally, Latin and Greek are not obligatory subjects for all grades of secondary education in Northern Europe, and graduation in the Universities does not necessarily involve the study of those languages. Modern languages may be taken in lieu. It hardly needs mention that, for certain careers, these languages are deemed necessary; and they are obligatory in the educational scheme which prepares for such careers.

9. *Latin and Greek in the United Kingdom.*—Boys in England usually enter a preparatory school at the age of about 9, and then commence *Latin* with about seven hours a week. This is increased up to the time that *Greek* is taken, when, as a rule, the time devoted to Latin is reduced to the original seven hours a week, and four hours being devoted to the Greek. In many cases this latter language is not commenced till 12, but such a delay is said to be impossible in the case of schools that intend to compete for scholarships. In these, Greek must be commenced at the age of 11 at the latest.[1]

In preparatory schools for boys under Lady Principals, Latin is often begun as early as 8, though French is frequently commenced before Latin. Greek, too, is taken frequently at 11.

In the "Special Reports on Educational Subjects," Vol. 6 is devoted to the place of boys' preparatory schools in English secondary education. In an article by Mr. Stallard, it states[2]:—

It appears to be the practice to begin the teaching of *Latin* to boys as soon as they can read and write English with some facility. They usually reach this stage by the age of nine—the age at which they generally enter a preparatory school. On entry, they at first devote somewhat less time than the rest of the school to Latin, but the hours are gradually increased as they go up the school until the point is reached at which Greek is begun, when the restrictions of the time-tables require some reduction to be in favour of the new subject. Thus on Time-table No. 5, a boy of nine gives seven hours a week to Latin. A year later rather more than nine hours. A year later he has returned to seven hours for Latin, and in addition now devotes four hours to Greek. At that stage the proportion between the two would remain constant unless he passed into the Scholarship form at the head of the school, when more time would be necessarily devoted to Greek to enable him to acquire the vocabulary required for the difficult "sight" translations that are commonly set.

Greek is sometimes not commenced before the age of twelve. But this practice, affording as it does opportunity to devote attention to some of the least noticed but highly important subjects of the time-table, is practically impossible for schools that compete for scholarships; for them, the standard of Greek required for scholarships is so high as to compel its inclusion in the curriculum generally at the age of eleven years, sometimes still earlier.

The reasons assigned for the study of languages are sometimes curious. For example, Mr. Hely-Hutchinson Almond says:—"A language may be learned for three purposes, *as a mental gymnastic, for its literature, or for practical utility. Latin is learned chiefly for the first purpose, Greek for the second, and French for the third.*[3]

As to method, he expresses the opinion that—

"A language also may be learned in two ways; by rational processes and by imitation. These two may, of course, be more or less combined. But, generally, it is true that *a language learned as a mental gymnastic ought chiefly to be learned* by rational process, and a language learned *for practical utility, by imitation. It is also true that an inflected language is far the most suitable as a mental gymnastic.* As no one has more conclusively pointed out than Mr. Goschen (Essays and Addresses), about five times as many mental processes have to be gone through in translating Latin as in translating French. Again, we do not want to be able to talk Latin fluently, but it is a main object of learning French to be able to use it readily in conversation. Therefore, French ought to be learned chiefly by imitation."

In regard to the organisation of the lower and intermediate grades of teaching, the following testimony of Dr. Williams speaks for itself:—

"We have no governing body to thwart or control us, it is true; but for all that, the guiding comes from above; and just as the *public schools are compelled to bow to the wishes of the Universities* and Woolwich, so are we obliged to adapt our teaching to the requirements of the public schools. To them we are in reality responsible; we cannot dictate to them or force upon them our ideas; we can only hope that when we represent to them the difficulties which beset us, they will arrange their system of work so as gradually to lessen them as they occur. As our opportunities of intercommunication increase, we find the head masters of public schools more and more inclined to lend a willing ear to any reasonable suggestions of ours, and it is of the highest importance that they should do so. We are to all intents the lower forms of the great public schools; their rulers now look upon us not only as valuable allies, but also as a necessary and integral part of themselves. This very question of beginning Greek they have in reality settled for us. More than ten years ago they realised how crowded was our curriculum; *they promised to make arrangements themselves for teaching Greek from the elements, and to admit on their Classical side boys without the slightest knowledge of the language.* What was the result? *A few preparatory schools took them at their word,* taught no Greek, devoted the hours thus saved to strengthening other subjects, and finally found out, *to their sorrow,* that boys well advanced in French, Latin, Mathematics, etc., were relegated to an absurdly low form at the public school because they knew no Greek! What they gave us with one hand they took away with the other. Besides, the public schools soon discovered that we, with our small classes and less complicated organisation, could teach Greek far more carefully and thoroughly than they with their large forms; they saw that if they continued to be responsible for thorough grounding in this elementary work, a larger staff of masters would be required; they acknowledged that we saved them some trouble and with our machinery did the work better. Consequently, the *status quo* returned. *Nothing permanent has been done.* We must for the present accept the fact and the responsibility.

"Since, then, a considerable amount of Latin and some Greek are obligatory for admission into a fairly high form of the classical public schools. We have in preparatory schools to consider how best to teach, amid the jostling mass of other necessary work, these two important subjects. It may, perhaps, be well to trace a child's course from the day of his arrival to the time when he first faces his public examiners."

This he then does. It is generally admitted that to provide good mental discipline is the function of Latin and Greek. Dr. C. Eccles Williams (D.D.), says, on this point, that "*Classical teaching, to be sound, must omit nothing;* there must be no gaps, and in it a proper and regular order of proceeding is generally accepted."[6] That the existing condition is not satisfactory appears in his recognition of a greater need for thoroughness. Apropos of this, he states that "It will not conduce to ultimate success if we attempt royal roads or short cuts in Latin and Greek. It is, on this account of the highest moment that as few breaches as possible should be made in the school's regimen and scheme of education."[7]

The opinion that the *chief* function of the study of Latin is to provide a mental gymnastic is becoming less dominant. It is becoming more widely recognised that a language, studied so as to form really part and parcel of one's mental furniture, mastered so as to allow one to spontaneously think and spontaneously express himself therein, is educationally on a vastly higher plane than one learned as mere mental gymnastic. Psychologically, it is quite another thing. That

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[1] "Special Reports," Vol. 6, pp. 43–60, 1900. The Time-table of work in Preparatory Schools. See specially p. 50.
[2] "Special Reports on Educational Subjects," Vol. 6, page 50. London, 1900. [3] *Ibid.*, p. 472. [4] *Ibid.*, p. 472.
[5] *Ibid.*, p. 188–9. [6] *Ibid.*, p. 192–3. [7] *Ibid.*, p. 192.

That the study of Latin and Greek is recognised as being by no means on a satisfactory footing is very evident also from the Report of the Committee of Council of Education in Scotland for 1901–2.[1] In reading the remarks hereunder, it is well to remember that the interest in education in Scotland is very strong, and self-criticism consequently severe.

In regard to Latin the report states as follows[2] :—

"The features noted in previous years in connection with *Lower Latin* have produced themselves in curiously accurate fashion. There is considerable evidence of good drilling in the rules of grammar, *but the candidates rarely shew power of applying these rules in simple composition*, are often very weak in grasping the meaning of a passage in translation, and rarely attempt to translate into good English. This varies, however, as between different schools; because, in no subject is the contrast between different schools—much greater than that between individual candidates—more marked, *and in no subject does really good teaching bear such direct and immediate fruit.* With a single exception, to be presently referred to, the grammatical questions were well answered. It is to be regretted, however, that *the rules of grammar*, seem, in many cases, to *have diverted attention from the more interesting literary features of the language*, and from its aspect as an instrument for attaining readiness in lucid expression, by the comparison of different idioms. The passage of prose set for translation was considerably better done than the passage of poetry, and it was in the latter that the absence of any effort to write idiomatic English was most frequently conspicuous. The contrast in many very fair papers was startling, and indicated a defective imagination and a lack of literary appreciation that are to some extent to be accounted for by the narrow range of reading the candidates had undergone. . . . . Most of these remarks apply equally to the *Higher Grade* papers. The standard for a pass has been kept high, and the fact that a considerable number reach it seems to prove that it is fairly well understood, and that many schools find it within their reach. This year there was a smaller presentation of candidates who had no chance of passing, and the general level of those really qualified to attempt the examination is distinctly rising. The passage for translation into Latin was tolerably well done. In a few schools, indeed, the "version" was really excellent, full of idiom and style. At the same time it must be said that, in a very large percentage of the papers, there was no attempt whatever at elegance of rendering, composition being evidently treated as a mere matter of avoiding errors. The normal order of words was fairly well understood in its main features. But change of order for effect had evidently not been sufficiently taught. Lack of elegance was even more conspicuous in the translation into English. Many aimed at nothing better than being baldly literal, no matter how clumsy or impossible the resulting sentences might be. In the passage from Cicero, the long periods were often rendered as they stood, without any effort to simplify or rearrange. *In both passages, many of the attempts at translation would have been meaningless without the original.* As a rule, the questions on syntax were well done. *Scansion brought out in a striking degree the difference between the thoroughly competent and the indifferent teacher.*"

The criticism of the teaching of Greek and its results are much the same in tone, as the following shews[3] :—

"It is satisfactory to find that in *Greek* the level of former years has been at least maintained. *A falling off in the number of entrants for Higher as well as for Lower Grade, indicates, I fear, a further decline in the popularity of this subject in schools.* The reports of the inspectors point in the same direction. So long as it is merely the weaker pupils who abandon the study (and, at present, that appears to be, to a large extent, the case), the decline is, perhaps, not much to be regretted. If, however, it should spread further, *it may result in a serious loss to the forces available for the intellectual discipline of the country.*

"The results in the Lower Grade paper were distinctly encouraging, the percentage of actual passes being higher than in the two previous years, and the percentage of good candidates being also higher, while bad failures are correspondingly fewer. The translation into English was, on the whole, well done. But, as in other subjects, *far too little attention was paid to correctness of idiom and style.* The conjunctions in the original, too, were often disregarded, although, as usual, they frequently gave the clue to the sense. The advance in respect of translation into Greek has continued. Accidence was well done on the whole, and syntax was fairly satisfactory. . . . . In the Higher Grade most of the candidates translated the passage from *Xenophon* with fair correctness. But the verse extracts were handled in a far from satisfactory manner. The whole language of poetry seemed strange to many pupils. It looks as if there were something very defective in the reading of poetry in schools. Few availed themselves of the option of doing the continuous passage of Greek composition. This forms a better and fairer test of the merits of candidates than detached sentences. The alternative has now been in operation for two years, and the time seems to have come when the continuous passage should alone be set. As usual, there was evidence of much hard work in grammar, but the explanations of syntactical points were often weak and inadequate.

"While much meritorious work continues to be done in connection with the Honours papers, there was little evidence of real distinction. As usual, therefore, the number of successes is few. In the translation paper, the passage from *Plato* caused the most serious difficulty. The other pieces were fairly well done, and the English style was not unsatisfactory. Too many failed to make the necessary distinction between the kind of language suitable for translating *Homer* and the kind suitable for translating *Aristophanes*. Consequently, it often happened that the spirit of the latter was not caught, even when the literal meaning had been correctly made out. Composition was very fair."

Anyone who recognises the value of Greek and Latin as subjects of study, and who realises also that the pressure which the advance of knowledge and conditions of modern progress must put upon the school-boy *is inevitable*, must appreciate the danger of these languages being crowded out. This is really their ever-increasing risk. The remedy for those who appreciate their importance is, therefore, to take care that they are *better taught*, and that progress in the teaching is as satisfactory as better educational knowledge can make it.

One only has to compare the way in which the German classic master is trained with the way in which masters are trained in England and here, to see that it is not possible to hold our own, *except Reform goes a very long way.* (Reference should be made to Chapters XXI and XXII hereinafter, see in particular Chapter XXI, section 7, and Chapter XXII, sections 3 and 4.) It is a recognition of danger, that important subjects may be crowded out, that explains largely the desire in Scotland to secure better teaching in classical schools. Individual examples of competency must not be allowed to shut our eyes to the fact of the general state of the case: that schoolmasters may be found here and there with a good knowledge of classics does not alter the argument. What is needed is *general* proficiency, and it is only a wide-extended and commanding knowledge not only of the Latin and Greek languages, but also of the methods of teaching them to boys, will adequately meet our national requirements. This is what Professor Postgate, of Cambridge, means in his demand for teaching and for the universal application of the conversational method.

10. *English Universities and their attitude as to Latin.*—Up to June, 1903, Latin was a compulsory subject for the matriculation of the *London University*, but by the special notice issued in August, 1902, the entrance condition in respect of languages was changed. The present regulation is that *English* must be taken, and one of the following, viz., Latin, Greek, French, German, Arabic, Sanskrit, Spanish, Portuguese, Italian, or Hebrew.[4] For

[1] London, 1902.
[2] *Loc. cit.*, pp. 322–3.
[3] *Loc. cit.*, pp. 324–5.
[4] Revised Regulations for Matriculation, August, 1902, pp. 15–16.

For the *Victoria University* with its Colleges, viz., Owen's College, Manchester; University College, Liverpool; and Yorkshire College, Leeds,[1] the entrance condition is *English*, and one of the following, viz., Greek, Latin, French, German, or other approved modern language.[2] The *University of Liverpool* has the same conditions as the Victoria University Of course, for special schools there are special enactments. For example, in Medicine the General Medical Council requires the matriculation for the professional education in medicine to embrace Latin and either Greek or a modern language. For Law, Latin must be included.

This, of course, is so everywhere, and there is practically no contention as to the necessity of demanding certain languages for certain subjects.

In the *University of Birmingham*, the Science matriculation demands a pass in *English* and one foreign language; while for Commerce that language must be French, German, Italian, Spanish, or Latin. For Arts, Medicine, etc., Latin is, of course, required.[3]

The preliminary examination in the *University of Edinburgh* in Science requires a pass in *English*, and two languages from amongst the following, viz.,—Latin, Greek, French, German, Italian, or such other language as the *Senatus Academicus* may approve. For graduation in Music, one of these must be a modern language.[4]

In the *University of Glasgow*, for graduation in Arts, *English* and Latin *or* Greek, and one of the following may be taken, viz., Greek or Latin, French, German, Italian, or other approved language.[5] But in Science, French or German may be substituted for Latin or Greek.[6]

The *University of Wales* demands for its matriculation a pass in *English*, *Latin*, and in two of the following, viz., Greek; Welsh, or French, or German; Dynamics; Chemistry or Botany. It specifically declines to accept the new matriculation, under the revised regulations of the University of London, which came into force in June, 1903.[7]

11. *Universities of the United States and Canada.*—The University of Harvard embraces the Harvard College, the Lawrence Scientific School, and fourteen other departments. For entrance to Harvard College it demands *English*, *one ancient language*, viz., elementary Latin or elementary Greek, and *one modern foreign language*, viz., elementary German or elementary French, and other subjects. Every candidate for admission to the Lawrence Scientific School is now required to pass in *English*, elementary *German*, elementary *French*, and other subjects. Advanced German may be substituted for elementary French, and advanced French for elementary German; but in such a case the omitted subject must be taken a year later.[8]

At *Yale*, Newhaven, by the "terms of admission" to the Sheffield Scientific School, *English*, *Latin*, and *German*, or *French*, are demanded, and also *Greek* for Yale College.[9] At the *Columbia University*, New York, *English* is compulsory, and entrance may take place without Latin or Greek. Elementary Latin counts for 4 points and Greek for 3, against 1 or 2 for modern languages. English, however, counts 3 points.[10] At the *University of Michigan*, *English* is compulsory, and one of the following, viz., Latin, French, or German.[11] At *Cornell*, Ithaca, New York State, *English* is compulsory for all courses, but even for *Arts* there are the following options, viz. :—

(A) Greek, Latin; (B) Latin, advanced French, *or* advanced German; (C) Advanced French, advanced German, advanced Mathematics.

For the courses in Engineering, Latin is not required.[12]

The *University of Pennsylvania*, Philadelphia, demands for entrance *English*, and for *Arts* and *Science* any two of the languages in Caption II, which includes Greek, Latin, French, German. In Science and Technology, Greek is *excepted*. In Mechanical, Chemical, Electrical and Civil Engineering, French or German is required; so also in Chemistry.[13]

Admission to the *University of California* does not necessarily involve passing in either Latin or Greek. English is compulsory, and the options include French and German.[14]

Admission to the *University of Wisconsin* involves *English* as obligatory, and for certain courses only modern languages are required.[15]

At *Princeton University*, *English* was obligatory on all students, so also was Latin, and either French or German; but for the course in Civil Engineering, only one of the three languages, Latin, French, or German—was demanded.[16]

The *McGill University* at Montreal asks, for the B.Sc. in Arts, *English*, which is obligatory in all courses, and *French and German*. Latin or Greek *may* be taken as an extra subject. In the Faculty of Applied Science, "French or German, or Latin or Greek" is demanded.[17]

12. *Influence of Efficiency of Teaching on the Question of Learning Languages.*—The preceding sections reveal the fact that, practically throughout the world, the insistence on Latin and Greek in matriculation for all branches of University education has been abandoned; and it is certainly abandoned in those countries whose contributions to textual and general criticism are most numerous and most brilliant. It is also abandoned in the countries where the teaching of classics is admittedly most thorough, and

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[1] The first and third were visited by the Commissioners.
[2] See the Calendar for 1903, p. 78.
[3] Calendar for 1903–4, p. 121.
[4] See Calendar for 1902–3, pp. 110, 249, 337, 382, 451.
[5] Glasgow University Calendar, 1901–2, p. 165.
[6] *Ibid.*, p. 191.
[7] See Calendar, 1902–3, pp. 177–8, 185–8.
[8] The Harvard University Catalogue, 1902–3, pp. 325–8.
[9] Catalogue of Yale University, 1902–3, pp. 204–210 and pp. 65–70. See also Cat. 1903–4, p. 167.
[10] Columbia University, Bulletins of Information, 1902–3, pp. 212–3.
[11] Calendar of the University of Michigan, 1901–2, pp. 46–7.
[12] The Register, Cornell University, 1902–3, pp. 33–54.
[13] University of Pennsylvania Catalogue, 1902–3, pp. 52–60
[14] University of California Bulletins, Register, 1901–2, May, 1902, pp. 63–84.
[15] Catalogue of the University of Wisconsin, 1901–2, pp. 69–83.
[16] Catalogue of the Princeton University, 1901–2, pp. 141–157.
[17] Annual Calendar McGill, 1902–3, pp. 13–15.

and where the average acquaintance with classics, and the power to express oneself colloquially in Latin and Greek, is most widespread. No one who recognises the great value of the study of the languages in question will, therefore, be lax in taking advantage of every possible means of securing for them a fair opportunity of continuance. This can come about through good teaching.

It is obvious that, in proportion as the teaching therein is excellent, so will the interest in any subject be intensified, and an acquisition of knowledge therein be facilitated. This applies no less to dead languages than it does to other subjects of instruction; consequently, the question very properly arises whether the efficiency of our teaching is such as to give *Latin and Greek a normal place in public estimation*, and a fair chance in the general competition of subjects. The Commissioners, consequently, endeavoured to learn what was the true state of things in regard to this matter, believing that what amounts practically to a *total* abandonment of the serious study of ancient languages will, in its ultimate effect, be a grave misfortune. To hold this, of course, in no way implies a belief that their study should be obligatory on all who proceed to the higher branches of education.

13. *Are Ancient Languages taught satisfactorily?*—For many years past the Commissioner here writing has heard it alleged by Englishmen, whose education has been received in Europe, and who have had both English and Australian experience, that the teaching of classics, not only here, but also in England, cannot compare in thoroughness with the teaching in Europe, and particularly with that in Germany.

Special inquiry was made as to the truth or otherwise of the allegation, and in prosecuting this inquiry it was the good fortune of the Commissioner to meet several persons qualified to give their experience. The following is a careful report of what was educed.

The inquiry was directed specifically to the following points:—

(i) Comparative state of knowledge of the Latin and Greek languages in the case of the best *Gymnasiasten* in Germany, and the best matriculants of colonial Universities.
(ii) Same comparison as regards the average Gymnasiasten (in Latin and Greek), and average Realgymnasiasten (in Latin), and the average Australian matriculant.
(iii) The relative capacity of both classes of student to express themselves colloquially in Latin and Greek, the criticism to include style in extempore speech and in writing.
(iv) Relative knowledge of the different classes of students of authors; relative quantity of their reading; the amount memorised.
(v) Critical knowledge of Latin and Greek literature.
(vi) Collateral knowledge of classical history and of philosophy, etc., in connection with the study of the language.
(vii) General matters.

The result of the inquiry may be set forth as hereunder. In giving this result, it ought to be stated that the Commissioner regards it to be his duty to set down truthfully what he believes to represent the facts. It is only in this way that we can hope to get an accurate knowledge of the merits and defects of our system of education, or learn the inevitable consequences of our present scheme of training for our teaching staffs. A dispassionate facing of the facts is the initial step toward remedying any defect that may inhere in or characterise our system, and the method of outspoken criticism, as followed in other countries in the review of their own systems, is a means to that end. Of the wisdom of this probably every thoughtful person is fully assured; so that, however severe the criticism, it is to be hoped that its *object* will be carefully borne in mind, viz., to enable us to make the appropriate and a sufficient effort in the direction of better secondary education.

For evident reasons, the Commissioner does not propose to refer to the names of the deponents.

14. *Classical Education in New South Wales compared with that in Germany.*—The comparison hereunder made depends very largely, though by no means entirely, upon such light as observation in a classical Proseminar at one of the renowned Universities of Germany, and in a classical Seminar in another renowned German University (on the *results* of the teaching in the *Gymnasien*) could throw on the question. The whole point is, of course, "Can Latin and Greek be as well learnt here as in other countries?"

The Philological and Historical Societies (Philologischer und Historischer Vereine) are a feature in Germany; and membership of any one of these affords excellent opportunity of making comparisons, and of learning with some exactitude what is attained at the secondary schools. This advantage had been possessed in the case of one of the gentlemen through whom the Commissioner made inquiry. It ought to be added, that less than one-half of the students are successful at the *Arbiturienten-Examen;* so that the German standard is severe.

In making a comparison of the knowledge of the Latin language possessed by the *better class* of Gymnasiast with that possessed by the *better class* of matriculant at our University, the *grammar*, etc., as distinct from its literature, may be first referred to. In respect of this, the German is more thorough than the matriculant in this State, though the difference is, perhaps, not so great as one might expect when it is remembered that, as a rule, the German has been taught his grammar systematically during the whole of his nine years' course at the Gymnasium,[1] and has been taught to observe the illustrations of the rules he has learnt in his grammar provided by the authors he reads. One is not surprised, then, to find that the better Gymnasiast is rarely at fault in a point of grammar. On the other hand, even the best of the matriculants of this State are seldom faultless in their grammar, though the errors they make are neither many nor, as a rule, very serious. It must not be forgotten in this connection that very few boys at our schools learn Latin for more than six or, at the most, seven years, and that a much smaller proportion of the school-time is devoted to the study of that language here than at the German *Gymnasien*. It may be mentioned that, at some of the latter, something is taught of the *history* of the Latin language, and of its relation to the other Italian dialects and the other languages of the Indo-European family, and this is valuable as regards intensifying interest in the language.

But

[1] The course is shorter under the Reform scheme.

But while the best of the matriculants of this State do not fall very far behind the better *Gymnasiasten* in this respect, the same is unfortunately not true of the *average* of the two classes. To leave out of consideration for the moment those taking Latin at the University, one testimony received by the Commissioner was expressed as follows:—

"I knew two students in their fourth year, neither of whom had given any time to Latin since he left the Gymnasium. One of them came from Berlin, the other from Gotha, and both had had their Latin characterised as '*genügend*'—the lowest class—in their leaving certificates (Reifezeugnisse). Yet with either of these men the average matriculant of this State could not be seriously compared, and though, of course, neither was brilliant, both could read an author of average difficulty with a fair amount of ease and with only occasional reference to dictionary, grammar, or commentary. Matriculants here, however, as a rule, use all three freely—to say nothing of the 'crib.'"

What has been said of these is equally true of students taking up Latin as one of their subjects at the Universities.

15. *Practical Education in the use of the Dead Languages.*—It will be generally conceded that the ability to write a language is a satisfactory test of a student's knowledge of it. In a four months' course of instruction in *Stilistik* in a German University, about two-thirds of the time is devoted to questioning the students—most of them fresh from the Gymnasium—on points of grammar, style, etc., while the remaining third is spent in the reading of compositions by the students themselves and the criticism of them by the professors in charge of the classes. The general standard of the work is high, and the professors seldom have to comment on anything worse than occasional Germanisms.

Reference has been made to the historical and philological clubs. These meet weekly for the reading and discussion of a Latin or Greek text, and *members are bound not only to attend but also to take an active part in the discussions.* A testimony received by the Commissioner writing, as to a comparison of the performances of freshmen as well as men of "higher semesters," was such that it could only confirm one in the impression that the German boys leave school equipped with a good knowledge of the Latin language, a knowledge really fitting them to pursue their study of it at the University with profit. An advantage of this thorough teaching ought here to be specially referred to.

The teachers at the Universities know that they may safely assume a good deal as to the knowledge of their students, and can arrange their lectures accordingly. Suppose, for example, that a professor announces a course of lectures on Horace's Odes. He would not conceive it to be his first duty to translate and explain the Odes to his hearers; *he would assume that his hearers, even the youngest of them, could do this for themselves.* He would spend from a third to half of the term on his "*Einleitung*" (Introduction), on the life and works of Horace and the various problems presented by them to the students of classical antiquity, and, by giving a complete bibliography of the subject, he would enable his students to pursue their studies further on their own account. The lecturers always seem to consider the *claims of the best of their students*, of those who may wish to do some original work. The remainder of the term would be taken up in reading a few odes. The lectures would be designed as *lessons in method*, not as aids in translation. This is said in so many words by the German professors. One even went so far as to say that it did not very much matter which part of an author's works was read in class, because all parts would serve his purpose equally well.

But until we send our students up with a better preliminary equipment, these methods of lecturing cannot be adopted at our colonial Universities.

In regard to the *Realgymnasiasten*, who take only Latin, the information of the Commissioner is less complete. In some Universities, Latin and Greek are considered as one subject (*Fach*) in the degree examinations—that is to say, Latin cannot be taken without Greek, nor Greek without Latin. This deters *Realgymnasiasten* from continuing the study of Latin at such Universities.

Our own average matriculants, according to the general evidence, cannot be compared with their German confreres. As is well known, it is by no means unusual to find candidates presenting themselves for matriculation who can neither decline a noun nor conjugate a verb; and who possess only the haziest notion of the difference between the active and the passive voices; whose use of the moods is governed by no laws whatever; and so on. The question may be asked—Is this to be attributed to the candidates themselves or to their teachers? When one reflects that our best students, who are to some extent independent of their teachers, compare not altogether unfavourably with the Germans, while the difference between the average of the two classes is so great, one is led irresistibly to the conviction that, although there are notable exceptions, the latter are in the main to blame.

An idea of the great difference of attainment may be had by remembering that our State matriculants, or even students of two or three years' standing, can rarely express themselves colloquially in Latin. The reasons for this are, of course, not far to seek. No effort is made at our schools to teach boys to speak Latin, nor, indeed, to regard Latin as a language that was once and may even again be spoken. *The speaking of Latin forms a regular part not only of the student's but also of the school-boy's work in Germany.* In regard to the German students, it ought to be said that they can generally express themselves in Latin. In many cases the command of words may not be great, and there may be a tendency to use the same phrase over and over again to express the same idea; but while the majority have a style that could hardly be classed as Ciceronian, students are occasionally met with whose style and range of vocabulary are admired not only by their fellow-students but even by their professors.

No doubt the Latin spoken by German students leaves something to be desired, even though it may be grammatically correct. All must confess, however, that the *practice in speaking confers one great benefit* on all alike. By speaking, students learn to *think* in Latin. A Latin phrase to such students is the expression of a thought, not an agglomeration of words that must be replaced by certain equivalent German (or English) words before becoming intelligible. Two proofs of this may be cited. Students are in the habit of discussing, after the meetings of the classical Seminar, the view put forward by the Seminar-directors and students during the course of the session; this could not be done except through the possession of a knowledge of the Latin spoken. In the second place, lecturers do not translate passages of Latin quoted in the course of lectures, however essential these passages may be to the argument, for they know quite well that they may safely assume that their hearers will understand. A professor lecturing on Philosophy to men *most of whom were not special students of Latin*, made no exception to this rule, though he was careful to translate any passages quoted from the Greek. This will give a fair indication of the thoroughness of the knowledge of Latin in the case of students attending the Universities.

16. *The reading of Authors, etc., in Germany.*—The authors read at a German Gymnasium are much the same as those read at our secondary schools, and set for our Junior and Senior Public Examinations—chiefly Cæsar, Cicero, Livy, Virgil, Horace, and Ovid. The *Gymnasiasten* read *more*, however, than most of the better class of matriculants here, *for they devote a greater proportion of their time and a greater number of years to the study of Latin;* but they do not read as much during their nine years as one might have reasonably expected, because of the extreme carefulness with which the texts are studied. Opinions are often expressed that there would be advantage in reading more and in paying less attention to detail during, say, the last two or three years of their course. By so doing, students would probably gain a deeper love for and insight into classical antiquity than many of them do under the present régime. Certainly there has been no lack of scholars in Germany of recent years to plead for a more sympathetic study of ancient life and literature. A considerable quantity of verse is learnt by heart by the *Gymnasiasten*. At the schools of this State less is learnt by heart; at many of them practically none at all is so learnt. One of the results of this is noteworthy, viz., that with very few exceptions students rarely read a passage of Latin, whether prose or verse, intelligently. Not only do they read the text before them as though it were a string of words having no connection with one another, as is always the case with a foreign language that is not really understood, but false quantities are by no means rare, and but few scan the simplest of metres with any certainty.

The average German student, we see, is a far better Latin scholar than the average student of our State. Both know something of the history of the Latin race and of Latin literature both can write Latin composition of a kind. But in both respects the superiority of the German teaching is very manifest, and most of all does it appear in composition. The Germans are encouraged, and indeed required, to write *original* Latin compositions as well as to translate from German into Latin, with the result that they acquire a far greater command over the language, a much greater facility in writing it, and a much finer style. *A German Dozent corrects not only the elementary grammatical mistakes of his young Students, but also their "stylistic" errors.*

17. *Greek in Germany.*—What has been said of the study of Latin in Germany applies in the main, and *mutatis mutandis*, to the study of Greek. But the qualification is necessary, for there is one important point of difference. German students, as a rule, cannot express themselves colloquially in Greek, presumably because they have not been taught to do so. In the Greek division of the classical *Seminarien*, as in the Latin, *Latin is the medium of communication.* The Germans stress Greek according to the written accent, while we pay but little attention to accent, and apply the Latin rules of accentuation in pronunciation. Of course, both are wrong, if the ancient Greek accent was a "musical" not a "stress" accent at all. But it seems better to treat the accent as the Germans do, firstly, because it compels one to learn the accents, and, secondly, because in modern Greek the accent is a stress, and we should thus be advancing on the road toward the acquisition of modern Greek.

More rational methods of teaching ancient languages will do much to make the study of higher educational value, and the testimony as to the disciplinary value, as estimated by relative successes in the careers of *Gymnasiasten* and *Oberrealschüler*, must be taken in conjunction with the better teaching of Germany.

18. *Recent Literature as to Humanistic and Realistic Education.*—The following bibliography restricts itself to recent German discussion of the question of the relative positions of classical and realistic education. Germany's great eminence in classics, her conspicuous contributions to science, and the thoroughness with which her leading men discuss questions of education, give a high value to her contributions to the discussion of the question to which this chapter addresses itself; and, as previously mentioned, the discussions are directly addressed to an important reform actually proceeding at the time they were produced. That reform has now been consummated, both in France and Germany, with the far-reaching consequence that the doors of Universities are no longer barred against those who take up other languages in lieu of Latin and Greek:—

Virchow, R., Lernen und Forschen. Rektoratsrede geh. zu Berlin am 15. Okt. 1892. Berlin, Hirschwald.

Schwalbe, B., Ueber den Bildungswert der Naturwissenschaften im Vergleich mit den fremden Sprachen. Vortrag. In: Zeitschr. f. Reform d. höh. Schulen. 1893. S. 21–24, 53–58.

Wiedersheim, Rob., Ueber die Vorbildung unserer akad. Jugend an den human. Gymnasien. Freiburg, Univ.-Buchh. 1894.

Jäger, O., Eröffnungsrede (über hum. und real. Bildung) auf der 43. Vers. deutsch. Philol. und Schulm. in Köln 1895. In: Verh. d. 43. Vers. deutsch. Phil. und Schulm. in Köln v. 24. bis 28. Sept. 1895. Leipzig, Teubner. 1896. S. 3–8.

Matthias, Adolf, Die Gleichwertigkeit der Oberrealschul- und Gymnasialbildung. In Zeitschr. f. lateinl. höh. Schulen. IX. 1897. S. 65 ff. Wieder abgedr. in: —, Aus Schule, Unterricht und Erziehung Gesammelte Aufsätze. München, Beck. 1901. S. 86 ff.

Baumann, Jul., Inwiefern eignen sich die realen Wissenschaften immer mehr dazu, die Grundlage der Bildung der Zukunft zu werden? In dessen: Realwissensch. Begründung der Moral, des Rechtes und der Gotteslehre. Leipzig, Dietrich. 1898. S. 275–291.

Wernicke, A., Die mathem.-naturw. Forschung in ihrer Stellung zum modernen Humanismus. (Vortr.) Berlin, Salle. 1898.

Harold Arjuna, Der neue Kurs im Unterrichtswesen. 2. Aufl. der Schrift: "Klassisch oder volkstümlich." Leipzig, Fleischer. 1899.

Bölte, Felix, Das klass. Altertum und die höh. Schule. In: Humanist. Gymnas. 1899. S. 161 bis 173. Besonders: Heidelberg, Winter. 1900.

Schmidt, Max C. P., Zur Reform der klass. Studien auf Gymnasien. Leipzig, Dürr. 1899.

Wolff, J. Jos., Naturwissenschaft oder Geisteswissenschaft als Mittelpunkt des Bildungsinhalts? Eine kritische Beleuchtung der von der Naturforschung an die Schule erhobenen Forderung. In: Pädag. Vorträge und Abhandl. Heft 28. Kempten, Kosel. 1899.

Pietzker, F., Sprachunterricht und Sachunterricht vom naturwissenschaftlichen Standpunkte. Ein Vortrag, geh. auf der 72. Vers. d. Naturf. u. Aerzte zu Aachen. Bonn, E. Strauss. 1900.

Soltmann, H., Verhandlungen der 45. Vers. d. Philol. u. Schulm. in Bremen v. 26–29 Sept., 1899. Leipzig, Teubner. 1900.

Kaemmel,

Kaemmel, Otto, Der Kampf um das humanistische Gymnasium. Aufsätze zur Reform des höh. Schulwesens. Leipzig, Grunow. 1901.
Paulsen, F., Der Prinzip der Gleichwertigkeit der drei Formen der höheren Schule. (Die Reform des höheren Schulwesens in Preussen.) Halle a. S. Buchh. d. Waisenhauses. 1902.
Lexis, W., Die Berechtigung zum Universitsstudium in Allgemeinen. (Ibid.)
Waldeck, A., Der Unterricht in Lateinischen. (Ibid.)
Von Wilamowitz-Mollendorf, U. Der Unterricht in Griechischen. (Ibid.)
Reinhardt, K., Die Reformanstalten. (Ibid.)
Lehmann, R., Vielheit und Einheit im Unterrichtswesen. (Ibid.)

A word or two will be sufficient as to the consequence of this discussion and of the change of régime.

In the summer semester of the years 1890 and 1900, there were the following numbers of schools and pupils. The Gymnasien include the Progymnasien, the Realgymnasien, the Realprogymnasien, the Oberrealschulen the Realschulen :—

Year.	Gymnasien.		Realgymnasien.		Oberrealschulen.	
	Schools.	Pupils.	Schools.	Pupils.	Schools.	Pupils.
1890	312	83,256	173	35,130	29	11,117
1900	354	96,354	97	23,248	175	45,283

	Gymnasien and Realgymnasien.		Realgymnasien and Oberrealschulen.	
	Schools.	Pupils.	Schools.	Pupils.
1890	485	118,386	202	46,247
1900	451	119,602	272	68,531

	All Three Schools.	
	Schools.	Pupils.
1890	514	129,503
1900	626	164,885

Roughly, it may be said that the schools have increased during the decade, 1890–1900, 22 per cent. and the pupils 27 per cent. In classics the schools have increased 13 per cent. and the pupils 15½ per cent. We see, therefore, that the classic tendency is to take *both* languages, viz., Latin and Greek, but that the conspicuous tendency is to abandon both languages for modern languages and science. The danger of a complete abandonment of ancient languages for modern appears to be a chimæra so far as Germany is concerned. The drift is either to Greek with Latin or to modern languages.

19. *Conclusions.*—The results of an examination into the normal place of Latin and Greek in a general scheme of education, briefly outlined in this chapter, are as follows :—

(1.) Those countries that have made the most extensive and important contributions to classical research, and among whose citizens are to be found the largest proportion of persons able to speak and write Greek and Latin freely, have abandoned insistence upon them as obligatroy subjects in all branches of higher education, and have allowed modern languages to be substituted in lieu thereof in certain cases.
(2.) This option, where so desired, of substituting modern languages for ancient, is practically world-wide.
(3.) There is an increasing recognition of the *cultural value of modern literature.*
(4.) Collaterally with this, there is a recognition that Greek and Latin are not unique sources of culture, but that linguistic cultivation is attainable by many paths.
(5.) It is also recognised that liberal education cannot ignore the great movements that are taking place in the world, and that for their proper appreciation, some education in other branches of knowledge is essential.
(6.) The enormous accessions of knowledge of natural phænomena, the increased control of the forces and other resources of nature, have necessarily to be adequately represented in curricula with any pretension to liberalism, and this modifies the condition under which Latin and Greek could be considered desirable as obligatory studies.
(7.) Science and Technology have most conspicuously developed in countries having the optional régime, viz., that which permits both ancient and modern languages, or either, to be taken.
(8.) The *mother-tongue* should be common basis for all forms of higher education.
(9.) Any two languages, in addition to the mother-tongue, constitute a normal requirement for those who desire to enter the higher forms of education.
(10.) A limitation of freedom of choice should be for special courses only (*e.g.*, Latin might be regarded as compulsory for Law, Medicine, etc., but ought not to be compulsory generally).
(11.) The application of the principle of academic equality of any two languages (in addition to the mother-tongue, to which by far the greatest importance should be attached, is the only practical way to give them their normal place.[1]
(12.) That the practical importance of the study of the dead languages is not here sufficiently recognised in the schemes of teaching them, is evidenced by the fact that they are better taught in the countries of Europe.
(13.) Linguistic cultivation is very important, and will be greatly facilitated by better methods of language teaching. Better teaching will help to retain Latin and Greek as subjects in the necessarily crowded curriculum which modern conditions demand.

[1] The significance of this will appear more clearly by a study hereinafter of the reforms in England, France, and Germany.

CHAPTER IV.

CHAPTER IV.

The New South Wales' Secondary System.

[G. H KNIBBS.]

1. *Introduction.*—Although elementary education in this State, in so far as its mechanism and organisation are concerned, has for some years been in advance of that in England, secondary education is practically only in the same condition, it having been much more strongly influenced by English traditions. It may be said, therefore, that the secondary education of New South Wales is as yet unorganised in the same sense as it is unorganised in England. Every secondary school can do as it pleases; there is no consensus of opinion, nor is there any definite scheme of mutual recognition among the different schools; and although public opinion and a school's reputation involve it in certain limitations in respect of its curriculum and its teaching staff, it is under no legal restriction and has no legal recognition in the way of educational status. The details of the curricula of the various schools are determined without any systematic reference between them, and the State has no "say" in the matter. The only factor really tending to give unity to secondary teaching, is a common endeavour to meet the requirements of the Public Examinations held by the University[1], and the Matriculation standard of that institution. Outside of this, and outside the necessity of conforming to public opinion, *which, however, is by no means definite on educational questions*, the secondary schools of New South Wales are absolutely untrammelled by the necessity of conforming to any general régime.

In regard to the *tincture* of secondary education, it may be said that, broadly speaking, the influence of British traditions has brought about a kind of under-current of opinion that the study of Latin and Greek is on a higher plane, or at least is more *reputable* than the study of other subjects. Speaking generally, also, scientific teaching is in a parlous state, and cannot for a moment be seriously compared with the teaching in the schools of any country of Europe.

A comparison of the teaching of the Classics with that of a French Lyceum or a German Gymnasium will also reveal the fact that the classical teaching is quite inferior to the European. This has been sufficiently demonstrated in a previous chapter, and the reason is obvious when the state of preparation of the European teacher and the general educational atmosphere are considered. It would be idle to pretend that youths leaving the secondary schools can express themselves in the Latin language, or that, except in very rare instances, they are capable of writing a thesis of any merit therein. The comment on Greek would have to be still more severe. In order to give an accurate idea of the relative grade of teaching, the programme of the French Lycée is given hereinafter in full (Chap. XVII).

Probably it will be recognised that the classic teaching of the English Public School is better than the teaching here; at least, the attainments of the average English school-boy are certainly higher in Greek and Latin than that of the average Australian school-boy. It is general admitted by those who have travelled in Europe, and who know anything of the European schools, especially those of Austria, Germany, and Hungary, that *the English school-boy does not compare (say) with the Teuton or Hungarian in classical thoroughness.* To remember that, will help us to recognise our own position in the matter—that is to say, our want of educational merit in scientific subjects is in no way compensated by any excellence in either ancient or modern languages.

The condition of secondary education generally is a reflex also of the absence of any definite demand as to the training of teachers for such education. Public opinion demands that the average secondary teacher shall have passed some University examination, or be perhaps a graduate, and to some extent also that he or she shall have specially studied the subjects taught. The whole arrangement, however, is a very loose one, and it is practically correct to say that the secondary teachers of the State are not trained in the sense they are in Europe. Here and there, one may of course find exceptions, and in rare instances secondary teachers have had *exceptionally good* training and a considerable amount of foreign experience. This fact, however, has but little influence on the system as a whole, because it is *accidental* and no part of a general scheme of preparation for the secondary teacher.

It must not be assumed that the state of education in New South Wales reflects in any way the conceptions of the abler educationists of the State. *Individuals are almost powerless in the existing educational atmosphere to bring about any real reform, and there is every reason to believe that many would both cordially support and ably assist any movement in the way of radical educational development.* On the other hand there are many who are representative of the spirit of insular self-satisfaction, and who believe, neither that we are educationally inferior, nor that any radical reform is necessary. *Reform will have to ignore their inevitable antagonism.* In nearly every case known to the Commissioner, the self-satisfied have neither continental experience nor great familiarity with continental literature.[2]

Those who really know where we stand will probably be ready to co-operate in any far-sighted scheme for bringing about a change in a healthy and earnest but quiet way.

The curricula of a number of schools other than State schools are given, so as to enable comparisons to be made.

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[1] The defects of the English University system and its unfavourable reaction of those defects on education will be dealt with later.

[2] This is almost characteristic, and reveals the real origin of the self-satisfaction.

2. *The Secondary Schools of New South Wales.*—The secondary schools of New South Wales may be divided into the following classes, viz.:—

I. State High Schools (as at Sydney and Maitland).

II. Private schools, with State endowment (*e.g.*, the Sydney Grammar School[1]).

III. Denominational schools.

IV. Private enterprise schools.

The State High Schools of New South Wales are referred to in Chapter V—the next chapter.

Examples of representative types of school are taken almost at random, providing only that they are typical. No useful purpose would be served by an extension of the list.

Besides the schools mentioned, a certain amount of secondary teaching is given in some of the Public Primary Schools: pupils, for example, are prepared for Matriculation, or for the Junior or Senior Public Examination held by the University.[2]

Most of the secondary schools have preparatory divisions, but in none is there a curriculum in the advanced section approaching the thoroughness of that of the French Lycée or the German Gymnasium.

It ought to be remembered that the secret of the great discrepancy is due, not only to the fact of *the earlier organisation of public education in Europe*, but also to the fact that *educational progress has been more rapid than with us.*

It may appear sometimes that the information supplied in regard to a particular educational institution is brief, and that it gives perhaps an inadequate idea of the character of the work done, or of the real nature of the curriculum.

The evidence is of value, however, merely for the purpose of shewing the real nature of the difference between Continental schools and those of this State; and a comparison of the curricula alone will partly reveal this, and a study of the organisation as a whole, and of the European scheme for the training of teachers, will disclose it more fully.

Speaking generally, the school hours are very short in Australia, and the strenuousness of the work is not equal to that in Europe. No science equipments in Australia are comparable to those in the European schools.

3. *The King's School, Parramatta.*—The King's School, Parramatta, is a school much of the type of the English Public School, so far as its general traditions are concerned. The total number of pupils is about 130, more than half being boarders.

The school is classified for different subjects as follows:—

(1) English subjects, (2) Latin, (3) French, (4) Mathematics, (5) Science, Drawing, or Greek. In the upper part, the Forms or Divisions coincide to a great extent; in the lower part, it is thus possible to place a boy exactly where he can receive the teaching he needs (as for example, in the case of one who comes fairly well advanced in English subjects but with little or no knowledge of Latin or French).

The regular hours of study are twenty-five in the week, broken into occasionally by a half-holiday or a remission of an hour on Wednesdays. Assistant-Masters are at work the whole time. Visiting Masters for Music and Shorthand take their classes out of the ordinary school hours. Saturday morning is utilised for detention.

A museum and chemical laboratory have been added recently to the buildings.

The ages of pupils attending the school are from 10 to 18: a few stay a little later, mainly those who are preparing for a University. *The School has in its gift two Exhibitions, tenable at Oxford or Cambridge only*, and candidates for these stay rather longer than they otherwise might. The general tendency nowadays, is to send boys to school younger than was the case some years ago, and to take them away earlier in life,[3] especially when they are intended for commercial pursuits or country life.

The twenty-five hours a week are arranged approximately as follows:—

Religious teaching	2 hours.
Latin	6 „
French	3 „
English subjects, *i.e.*, English author and grammar, etc., geography and English history	5¾ „
Mathematics	6¼ „
Science, Drawing, or Greek	2 „

There are considerable variations in this, to suit individual cases. A certain number, generally from twenty to thirty, do not learn Latin; these do extra English work, extra arithmetic, and bookkeeping. Again, many boys, for the needs of their future work in life, specialise a little in the upper part of the School, their time for Science being doubled, or an addition being made to their hours for Matriculation subjects. As the School is not large, this is managed by keeping a strong staff. Greek is taken by very few indeed.

The work of the highest Form but one, and of the corresponding Mathematical Division, covers preparation for the Junior Public Examination.[4]

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[1] The Sydney Grammar School has, for example, a statutory endowment of £1,500 per annum.

[2] The fact that this is possible betrays at once the great difference in the educational development of a youth entering an English or Colonial University and a Continental University.

[3] This is not a healthy tendency.

[4] For the above information the Commissioners are indebted to the kindness of the Rev. A. H. Champion, M.A., Head Master, to whom their thanks are hereby acknowledged.

4. *Newington College, Stanmore.*—The Newington College, Stanmore, near Sydney, is under the ægis of the Methodist denomination. The curriculum of the College is as hereunder:—

Curriculum, Newington College.

Subjects.	Prep. Class.	Modern Division.			Classical Division.				
Class	.....	Lower.	Middle.	Upper.	II.	III.	IV.	V.	VI.
Average Age (Approx.).....	11	14½	15½	16	13	14	15	16¼	17
French	1⅓	...	...	...	3¾	3¾	3¾	3½	3
Latin	1½	...	...	...	3¾	3¾	3¾	3¾	3¾
Greek...	...	...	...	...	1½	3¾	3¾	3¾	3⅓
German (optional)	...	...	...	...	...	...	...	...	...
English	5¼	5¼	5¼	4½	1⅓	3¾	3¾	3¾	3
History	1	3	3¾	3	2¼	2¼	1¾	3	...
Geography	1	3	3	3	2¼	...	...	...	...
Mathematics	5	8¼	8¼	7½	7½	7½	7½	7½	9¾
Geology	...	...	¾	3	...	...	...	...	...
Physiology	½	...	...	2¼	...	...	...	...	...
Physics	...	...	...	...	¾	...	...	...	...
Chemistry	...	...	¾	...	...	¾	1¼	...	...
Bookkeeping	...	2¼	¾	...	...	...	...	...	...
Shorthand	...	1⅓	1½	...	...	...	...	...	...
Drawing	½	...	...	..	...	...	...	...	...
Descriptive Geometry (optional) ...	...	...	...	...	...	...	...	...	...
Writing	2	1⅓	1½	...	¾	...	...	...	...
Reading	...	¾	...	...	1½	...	...	...	...
Singing	½	...	...	...	...	...	...	...	...
Scripture	⅓	¾	¾	¾	¾	¾	¾	¾	3¼
Ancient History	...	...	...	...	...	...	...	...	1½
Totals	21¼	26¼	26¼	26¼	26¼	26¼	26¼	26¼	25⅓

Although the hours given are approximate, the relative distribution of time is fairly shewn in the above table. The ages are also only approximate. The following general observations will elucidate the system:—

To *German* is given, for those who wish to learn it, 3 hours a week. It is made alternative with Greek.

The time for *Practical Chemistry*, 1½ hours per week, for those who take it, is deducted from another subject, *e.g.*, Greek.

Greek is usually taken in the classical forms; but some pupils spend *all* or *part* of the time allotted to it in *Chemistry* or *Physics*, in addition to what is indicated in the table.

For *Drawing* there is a *special class* of 2 hours a week, but only for those who desire to take the subject.

Descriptive Geometry is included in "Mathematics," the geometry lessons being partly theoretical and partly practical.

To *Military Drill* 1 hour a week is devoted by Cadets, the time subtracted from another subject. In the case of recruits, 1¾ hour per week is given. There is a special voluntary class.

To *Gymnastics* ¾ hour per week is devoted.

For *Typewriting* there is a special class of 1½ hour per week.

Music (either piano or violin) is taught as required.

Boys provide their own books, excepting, of course, those of reference. Outside a limited number of necessary books, there is neither a classical nor scientific library in any proper sense of the word. The scientific equipment is a small collection of instruments for the teaching of *Physics*, and for *Chemistry* there is a laboratory supplied with a set of reagents and apparatus for practical work. A class of (say) eight pupils can work fairly easily in this. *Botany and Zoology* are not taught.

For teaching *Geology* there is a fair collection of typical rocks and fossils, sufficient to give an accurate idea of the elementary parts of the subject.

The hours devoted by the Masters are as follows:—

In the *Preparatory School* the Master gives the whole of his time—21¼ hours per week.

Form-Masters are at work 26¼ hours per week. The Visiting Masters devote the following time, viz.:—

French (Senior) gives	4⅓ hours per week.
Classical (Senior) gives	6⅓ „ „
Typewriting }	(as required).
Shorthand }	3 hours per week.
Gymnastics	¾ „ „
Drawing	2 „ „
Special Writing	¾ „ „

The Head Master or Principal devotes 24 hours a week to the work of the school.[1]

There are both day-scholars and boarders at the College.

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[1] The above information has been kindly supplied by the Rev. C. J. Prescott, M.A., the "Head Master" or Principal of the College, to whom the hearty thanks of the Commissioners are here expressed..

5. *St. Joseph's College, Hunter's Hill.*—St. Joseph's College, Hunter's Hill, near Sydney, is a college of the Roman Catholic denomination. There are eight classes, the boys averaging from 10 to 20 years in age. The curriculum is as indicated hereunder:—[1]

Curriculum, St. Joseph's College.

Subject.	Hours per Week.							
Classes (Ages 10–20)...	VIII.	VII.	VI.	V.	IV.	III.	II.	I.
Religion	6	4	4	4	4	4	4	4
French	...	...	...	3	5	4½	4½	4½
Latin	...	...	5	5	5	6	6	6
German	...	...	...	...	...	(5)	(5)	(5)
English	8	8	6	4	3	4½	4½	4½
History	2	3	3	2	2	(3)	(3)	(3)
Geography	2	3	3	2	2	(2)	(3)	(3)
Mathematics	8	6	8	9	9	13	13	13
Natural Science	2	2	...	...	...	...	...	...
Geology	...	...	...	...	...	(3)	(3)	(3)
Physics	...	...	...	...	...	(3)	(3)	(3)
Chemistry	...	...	...	...	...	3	3	3
Drawing	1	1	2	2	2	(4)	(4)	(4)
Book-keeping	...	1½	1½	1½	2	...	...	...
Stenography	1	1½	1½	1½	1	...	...	...
Totals	30	30	34	35	35	35	35	35

Mathematics in Classes III, IV, V, VI includes, Arithmetic, Algebra, Practical and Theoretical Geometry.

Mathematics in Classes I, II includes Arithmetic, Mensuration, Algebra, Applied Mechanics, Trigonometry, Geometry.

Principal teachers ... ... 12 hours per week.
Special Teacher, for various classes ... ... 25 „
Three Teachers in Classes I, II ... ... 21 „ each.
Teachers in Class III .. .. 24 „ „
Teachers in Classes IV, V ... ... 35 „ „
Teachers in Class VI ... ... 34 „ „
Teachers in Classes VII, VIII ... ... 30 „ „

The Chemical Laboratory contains all necessary appliances for a full course of Inorganic Chemistry.

The Physical Laboratory contains the instruments necessary for illustrating the principles of Magnetism, Electricity, Sound, Light, and Heat, among which may be mentioned Telescopes, Spectroscopes, also a working-model Steam Engine.

The Library contains a number of volumes, totalling about 1,160. They include, besides "The History of Ready Reference" and a very large number of religious works, the complete works of the following authors:—Shakespere, Dickens, Scott, De Quincy, Marion Crawford, Cardinal Newman, Chambers' Miscellany, Thackeray, Lord Lytton, Justin McCarthy, Father Finn, Dean F. Farrar, Gerald Griffin, Henty, Ellis.

Scientific Works on the following subjects exist, viz.: Astronomy—Lockyer, Ball, Airy, Godfray. Surveying—Gillespie, Usill, Johnson, Warren. Chemistry—Fresenius, Roscoe, Tilden, Newth, Clowes and Coleman Thorpe, Remsen. Physics—Deschanel, Ganot, Tyndal, Tait, Guthrie, Glazebrook and Shaw, Wright. Geology, etc.—De La Beeke, Lyell, Geikie, Mill, Davis, Judd, Page, Bird, Thornton, Curran, Watts. Mechanics, etc.—Ball, Law, Warren, Goodeve. Scientific Magazines—The Chemical News, Scientific American. Literary Criticism—Gervinus, Bowden, Coleridge, Ransome. Biographies—Leading Churchmen, Statesmen, Soldiers, Authors, Explorers, etc.

The following Magazines are regularly received:—"Ave Maria," "Catholic Fireside," "Review of Reviews," and few others occasionally,

6.

[1] The Commissioners are indebted to the kindness of the Rector for the information given, hereby acknowledged with many thanks.

6. *St. Ignatius College, S.J., Riverview, Sydney.*—The curriculum of St. Ignatius College at Riverview, near Sydney, is as follws :—

Curriculum, St. Ignatius College.

Subject.	Elements.	Rudiments B.	Rudiments A.	III Grammar.	II Grammar.	Junior.	Sub-Senior.	Senior, 1905.	Senior, 1904.
French	...	3½	3½	3	3	3	3	2	3
Latin and Ancient History	...	6	6	5	5	6	6	6	6
Greek	...	...	...	4	4	4	4	4	4
English	15	6	6	3	3	3	2	3	2
History (Modern) and Geography ...	3½	3	3	2	2	...	2	2	2
Mathematics	6	6	6	8½	9½	9½	9½	9½	10
Elocution[1]	...	½	½	½	½	½	½	½	...
Special Mathematics	Included in Mathematics.								
Physics and Chemistry...	...	...	...	1	1½	1½	1½	1½	...
Drawing,[1] or	Reading (2)	1½	1½	1½	1½	1½	1½	1½	1½
Technical Drawing[1]	...	1½	1½	1½	1½	1½	1½	1½	1½
Descriptive Geometry	Included in Mathematics.								
Totals	26½	26½	26½	28½	30	29	30	30	28½
Writing	2	2	2	...	...	...	...	...	...
	28½	28½	28½						

Besides the above there are the following :—

(1) Religious Doctrine for all classes, at least 1½ hour.
(2) Singing for all classes below Junior, 1½ hour.
(3) Writing for all classes below III Grammar, 2 hours.

There is no coalescing of classes, except in the case of the two Senior Classes in Mathematics and in Classics. In Chemistry and Physics, however, the upper classes are redistributed into two classes.

The daily preparation in study averages nearly 5 hours in summer and 4½ in winter. All "homework" is done in this time. "Rudiments" and "Elements" have 1½ hour less than this every day.

The time for the Physics-and-Chemistry class is taken from study-time of II Grammar and Upper Classes, 2½ hours.

The regular school hours, *omitting* drawing, singing, and study, are 5, excepting on the two half-days each week, they are reduced to 3.

The College staff consists of (1) the Rector, who is the general administrator; (ii) 7 Masters; (iii) 4 Prefects; (iv) a Prefect of Studies. The last immediately supervises the studies and is responsible to the Rector.

(2) Masters who are not engaged in any duties of Prefects of discipline in dormitories, play-rooms, study-hall, or play-grounds, teach full hours, *i.e.* some (three) 5 hours and others 4 hours.

Those engaged in duties of Prefects teach only from 2 hours to 3 hours a day.[2]

7. *The Scots College, Sydney.*—The College, Bellevue, Rose Bay, Sydney, is a Boys' College under ægis of the Presbyterian denomination. It has a classical and modern side, the curriculum being as hereunder :—

Curriculum of Scots College, Sydney.

Subject.	Hours per Week.[3]							
Classes	I.	IIb.	IIa.	IIIb.	Modern.	IIIa.	IV.	V.
Divinity	1	1	1	1	1	1	1	1
Latin	5	5	5	5	...	5	7	9
French	...	...	4	5	...	5	7	9
History	2	2	2	2	2	2	2	2
Reading	2	2	2	2	2	2	...	...
Writing	4	6	4	4	4	4	...	...
Transcription...	1	5	...	...	...	...	...	...
Spelling	1	2	2	2	2	2	2	...
English Composition...	2	2	1	1	1	1	1	1
English Grammar	2	2	2	2	2	2	2	2
Geography	2	2	2	2	2	2	2	2
Commercial English	...	...	...	...	2	...	...	...
Commercial Geography	...	...	...	...	2	...	...	...
Shorthand	...	...	...	...	3	...	...	...
Bookkeeping	...	...	...	...	3	...	...	...
Commercial Arithmetic	...	...	...	...	2	...	...	...
Metric Arithmetic	...	...	...	...	1	...	...	...
Geometry	...	2	2	2	...	2	2	2
Algebra	...	2	2	2	...	2	2	2
Arithmetic	7	5	5	5	5	5	5	5
Mental Arithmetic	1	1	1	...	...	...	...	...
Mensuration	...	...	...	...	...	...	1	1

[1] Optional. [2] This information has been very kindly supplied by Rev. Dr. Gartlan, S.J., Rector, to whom the Commissioners' thanks are here expressed. [3] Actually, 45 minutes is devoted to each lesson.

Greek is an optional subject. Drawing is taught to all boarders for 1 hour per week. To Physics and Chemistry 4 hours a week are devoted, the lessons being given in the evening.

The Principal gives 20 lessons a week (actually 15 hours). Three masters teach over 31 hours a week, and one about 34 hours.

Visiting masters give lessons in Chemistry, Drawing, Drill, and Rifle-practice.

The library of the College has about 300 classical and scientific works. The chemical laboratory is so fitted that pupils may make experiments themselves, and their course in Chemistry includes practical work.

In connection with the College is a Mountain House, to which students, whose homes are at a distance, go during vacation and are encouraged to do a certain amount of nature-study. Boarders of the II Division, viz., those under 14 years of age, have each a separate garden plot to which they devote time not taken up by sports.

Recent additions to the equipment of the college are an armoury, a carpenter's shop, a gymnasium, etc.[1]

8. *The Sydney Grammar School.*—The following information is kindly furnished by A. B. Weigall, Esquire, M.A., the Head-master of the Sydney Grammar School, in response to the Commissioners' request.[2]

Sydney Grammar School.—Distribution of Hours.

Subjects.	Hours per Week.							
	Lower School.				Upper School.			
				Commerce.	Commerce.	Classic.		
Classes	IC IB	IA 2B 2A 3C 3B	3A	4, 5.	I.	IV.	V.	VI.
French	...	3	3	...	...	3	3	3
Latin	5	5	5	...	...	6	5	5
Greek	...	...	2	...	...	4	4	4
German	...	...	2	...	...	4	4	4
English	8	4	4	7	5	3	3	2
History	...	2	1	2	3	...	2	2
Geography	2	2	...	3	4	...	...	...
Mathematics	7	7	7	11	7	8	8	8
Chemistry	...	...	...	...	...	3	4	4
Physics	...	...	...	...	...			
Special Arithmetic ...	...	...	...	...	3	...	...	...
Shorthand	..	...	...	...	1½	...	...	...
Writing	2	1	1	1	2	...	...	...

Besides the above there is 1 hour revision throughout.

Some of the above subjects are alternative, *e.g.*, Greek or German, History or Natural Science, English or Natural Science, and so on.

The equipment is:—

A (i) Simple apparatus for lecture experiments in elementary physics.

(ii) A fairly equipped laboratory for class work in chemistry.

B (i) Upper and Lower School libraries of works of fiction, travel and biography.

(ii) Special reference library containing both classical and scientific works of reference.

(iii) A Lower School library of school readers, in sets of thirty for class use.

The hours of direct class teaching are :—

Upper School.—Head-master, 12 hours; Senior mathematical master, 20 hours; 1 master, 22; 1 23; and 9, 25 hours' per week.

Lower School.—Master of lower school, 18 hours; 9 assistant masters, each 25 hours per week.

9.

[1] Commissioners are indebted to the Rev. A. Ashworth Aspinall, B.A., Principal of the College, for the above information hereby thankfully acknowledged.

[2] Commissioners' thanks are here tendered for the information kindly forwarded.

9. *The Sydney Church of England Grammar School, North Sydney.*—The curriculum in the different divisions of the Church of England Grammar School of North Sydney is as hereunder.[1] As in Sydney Grammar School the school has a commercial and a classical side.

Curriculum, Church of England Grammar School, North Sydney.

Subjects.	Lower School.	Middle School.	Upper School.		Commercial side.
	Hours per Week.				
	Lower Remove.	Upper Remove.			Mods. Mods.
Classes.....	IIA. IIB.	A. B. IIIB. IIC.	IIIA. IVB. IVA.	V. VI.	A. B.
French	3	3	4	4	...
Latin	4	4	5	7	...
Greek	...	...	(3)[1]	(3)	...
English	2	2	3	2	2
History	2	1½	(3)[1]	2	2
Geography	2	1½	...	...	3
Mathematics...	6	7	8	8	9
Physics	...	...	3[1]	...	...
Natural Science	...	2	...	...	3
Drawing or woodwork	1⅓	2	...	...	1⅓
Divinity	1½	2	2	2	2
Writing, bookkeeping, &c., dictation ...	3	...	...	...	2½
Totals	25	25	25	25	25
Average ages	12½	14	15	16	15

The subjects marked [1] are alternative subjects. It may be mentioned that Greek is taken only by about 12 pupils.

The classical library of the School has about 100 volumes, and the scientific library about the same number. There is some apparatus for the teaching of *Physics*, sets of "maps," illustrations for *botanical* and *physiological teaching*, a *laboratory* for practical work in *Science*. There is a general library of over 1,000 volumes, and a fine reading room for the use of the pupils.

The whole staff of 14, from the Head-master downward, are teaching, or are all engaged in school work for 25 hours per week each. A drawing master attends for 4 hours a week, and instruction is given in gymnastics and drill for an hour a day after school hours.

10. *All Saints College, Bathurst.*—All Saints College, at Bathurst, is an example of a college at one of the larger towns of New South Wales. There are five forms, the ages being as hereunder:—

	Lower School.		Upper School.		
Form	I	II	III	IV	V.
Age	11½	12½	13	14	15½.

For Science subjects the pupils attend the local Technical College, a State Institution.

The ordinary curriculum is about as follows:

Subjects.	Hours per Week.
Latin, or as alternative, Bookkeeping, Shorthand, or other commercial subject	4
French	3
English	1
History, or as alternative, Chemistry	2
Geology (Upper School only)	2
Reading and Writing (Lower School)	
Geography	2
Mathematics	8¾
Scripture	½
Drill	1
Total	24¼

In addition to the above, Drawing, Music, Carpentry, and Typewriting, are also taught, outside the ordinary school hours, as extras.

No special provision is made in the way of a classical or scientific Library, but in the former matter, the Head-master's books are lent to the students when desired, and Chemistry, etc., are learnt at the local Technical College.

Apart from evening preparations the number of hours devoted to teaching by all members of the staff are 24½ per week.[2]

11.

[1] For the information kindly supplied by C. H. Hodges, Esquire, M.A., Head-master, the Commissioners desire to express their hearty thanks.

[2] The above information is kindly supplied by H. E. Britten, B.A., Principal of the College.

11. *Burwood Ladies College.*—The Burwood Ladies College, near Sydney, is a denominational institution (Methodist).

The hours devoted to school-work are from 9·20–12·30 in the morning, excluding a quarter of an hour's recess from 11–11·15; and in the afternoon from 1·30 to 3·30. Girls preparing for examinations work in special classes for six months in the year from 3·45–4·30.

There are a Kindergarten and six Forms in the school.

The *Kindergarten* is worked apart from the main school in a separate building. The children are under the charge of a trained teacher, who is assisted by two or three students.

In *Forms I and II*, the subjects of instruction are: —

Arithmetic, Algebra, English, Latin, French,[1] History, Geography, Geology or Botany, and Scripture, in their very elementary stages, Essay or Letter-writing, and Reading, Writing, Spelling (much attention being bestowed on these last), Drawing (Ambidextral and Brush Work), and Sewing.

In *Form III*, the subjects set are the same as those in the lower Forms, the standard, however, being higher. An easy English author is studied, and less attention is given to Spelling, Reading, Writing, etc.

In *Form IV*, the subjects taught are the same as those already named, but their method of treatment is far more advanced. English includes Grammar and the study of the author set for the *Junior Examination*.[2] Much less attention is paid to Reading, Writing, and Spelling.

Form V.—Girls who enter for the *Junior University Examination* are taken from the Upper Division of this Form. Seven or eight subjects are studied by each girl, and those who enter for the Public Examination are permitted for the last six months before their examination to specialise in these "Junior" subjects. During this time they attend the special after-school classes. The subjects of instruction are:—

Arithmetic, Algebra, Latin, English, History, Geography, Geology or Botany, Euclid, French, Greek, Scripture, Physiology, Music (Theory), Spelling. The first seven subjects and Scripture and Spelling are compulsory unless a special arrangement has been made to the contrary.

Form VI.—From the Upper Division of this Form, the pupils who enter for the University Senior Examination are taken. The Text-books used are those recommended by the University for the Senior Examination and others of the same standard. The classes include the following subjects:—

Arithmetic, Algebra, Euclid, Astronomy, Latin, Greek, French, Scripture, English, History (European and Ancient), Geography, Geology, Botany, Physiology, Theory of Music, and Model and Freehand Drawing.

When entering Form VI the girls are allowed to choose special subjects for study, the number of subjects varying from five to ten, according to the ability and taste of the pupil. The spare hours thus obtained are used by the pupil for reading in any subjects for which she has shewn aptitude, or, on the other hand, which need special strengthening. The aim throughout is to make the work done as practical and broad as is possible in the short time of school work.

Each pupil has a quarter of an hour's drilling in Breathing Exercises and in Sandow and other Physical Exercises, twice a week. For this purpose a class of not more than ten girls at a time goes twice each day to a specially qualified teacher. In addition to this, a class for Free Exercises is held for half-an-hour once a week in the open air, and Gymnastics is taught as an "*extra*" subject.

In addition to the ordinary school Drawing-classes, special Drawing and Painting lessons are given as *extra* subjects.

The Theory of Music up to the standard of the Trinity College Junior Examination is taught during the first six months of the year. These classes are replaced by Class-singing in the latter half of the year. The Theory of Music beyond the Junior Standard is taken as an *extra* subject.

Music (Pianoforte, Violin, Organ), and Elocution, are taught as *extra* subjects under several Masters and Mistresses.[3]

12. *The Presbyterian Ladies' College, Croydon.*—The Presbyterian Ladies' College of Croydon, near Sydney, New South Wales, is a well-equipped college, with fine grounds, and is under the ægis, as the name implies, of the Presbyterian denomination. Its classes are as shown hereunder:—

Class V (lowest).—Reading, Writing, Spelling, Arithmetic, Needlework, Freehand Drawing, and Elementary Lessons in History, Geography, Grammar, and French (including conversation).

Class IV.—English (Reading, Spelling, Grammar), Object Lessons, Writing, English History, Geography, French, including conversation.

Lower III Class.—English (Reading, Spelling, Grammar, Composition), Writing, English History, Geography, Botany *or* Physiology, French (including conversation), German *or* Latin, Arithmetic, Algebra, Theory of Music, Needlework, Class-Singing.

Upper III Class.—As Lower II, with Writing, Reading, and one science only.

Lower II Class.—English (Spelling, Grammar, Composition, Literature), English History, Geography, Geology, Botany *or* Physiology, French (including conversation), German *or* Latin, Arithmetic, Euclid, Algebra, Theory of Music, Needlework, Class-Singing.

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[1]French is an optional subject; the students in the four lower Forms who do not take French do Map-drawing.

[2]A Public Examination held by the University of Sydney.

[3]The Commissioners are indebted to the kindness of the Rev. E. J. Rodd, President of the College, for the preceding information The Commissioners' thanks are hereby acknowledged.

The work in the upper classes is as hereunder:—

Subjects.	II B.	II A.	II A (Special) University Junior Examination Class.	University Senior Examination Class.	Remarks.
	Hours per Week.				
Latin or German	3	3	3	3	All subjects are taught to the Senior Examination Standard. Seven of the ordinary subjects are compulsory for Junior Examination Class, any number up to ten for the Senior Examination.
English	2	3	3	3	
French (including Conversation and Literature)	5	5	5	6	
History (Ancient and Modern)...	2	3	3	6	
Arithmetic and Mensuration	4	4	4	3	
Algebra	2	3	3	3	
Geometry	3	3	3	3	
Geography and Physiography	2	3	3	3	
Trigonometry	...	...	...	3	
Geology and Palæontology	2	2	2	3	
Physiology	2	2	2	2	
Harmony and Counterpoint	1	2	2	2	
Needlework	1	...	...	...	
Composition	1	...	...	...	
Class Singing	2	2	2	2	
Shorthand...	1	1	1	1	
Book-keeping	1	1	1	1	
Drawing and Painting	1	1	1	1	5½ hours.
Gymnastics	2	2	2	2	
Dancing	1	1	1	1	
Elocution	1	1	1	1	
Dressmaking	2	2	2	2	4 hours.
Scripture	1	1	1	1	

There are also classes in Pianoforte, 'Cello, and Violin-playing. Drawing, Painting, Gymnastics, Dancing, Elocution, Solo Singing, Shorthand (Cambridge Orthic), and Book-keeping. These subjects are extras. Pupils in Music and Gymnastics receive two lessons a week from a master or mistress. Dancing is taught only from April to September. Classes for Dressmaking, Cooking, Swimming, Ambulance work, etc., are formed at intervals.

Class-room provision is now being made for the teaching of Chemistry and Astronomy.

The College contains about 100 rooms, twenty-four of which are set apart for school purposes, including a large school hall, which contains a pipe-organ of twenty-five stops. The school-room and class-rooms are nearly wholly supplied with single desks on the American system, seats in the new wing being of the latest model and adjustable both as regards "height" and "distance." The floor space per pupil is 56 square feet; the cubic space 807 cubic feet.[1]

The equipment includes large and medium relief maps, a collection of fossil and modern shells, a good microscope with petrological and histological slides, about 1,000 specimens of rocks, a library, a chemical laboratory, various historical documents, mathematical models, a properly equipped studio from the antique and modern, for drawing and painting, plate-glass blackboards ruled for teaching of modern geometry and harmony, three cloak rooms, and the latest and best appliances for sanitation.

The College has both day pupils and boarders.[2]

The teaching staff consists of the Principal, Lady Superintendent, eight resident teachers, and twelve visiting teachers.

13. *Training of Secondary Teachers for Ladies' Schools.*—The "Teachers' Association of New South Wales," a body not connected with the State schools, established a committee known as the *Training Board.* In its earlier stages of its work, this Board undertook the examination of and the granting of diplomas to persons who had received adequate preparation for the teaching of young children. The theoretical instruction of these was undertaken by Miss Margaret Hodge, who had had special experience both in England and Europe, qualifying her as an instructor in training. The present course is given at "Shirley," Edgecliffe-road, Sydney, under the direction of Miss Hodge, and with the assistance of Miss Newcomb, who also had special experience.

The professional training of secondary teachers lasts one year; candidates must be *graduates* of a University.

The course includes:—

(*a*) Practical Work-Observation of Lessons. Preparation of Lessons and teaching under supervision.
(*b*) Theoretical Work:—Physiology, Psychology, Logic and Ethics, History of Education, Methods of teaching the various school subjects, Class Organisation, and Management.

Up to Christmas, 1903, five students had taken the Secondary Diploma. At the present time there are three students passing through the course qualifying for secondary teaching.

Courses are also given qualifying for primary teaching, the preliminary condition being that students must have passed the Junior Examination at the University of Sydney, or an equivalent examination. The following is taken from the prospectus kindly supplied by the Directress, Miss Hodge, to whom the Commissioner desires to express his thanks for information supplied with regard to the course.

Students who take either of the Courses in its entirety are qualified to present themselves for the corresponding examination for Teachers, half-yearly by the Training Board of the Teachers' Association, New South Wales. Lectures

[1] Reckoning corridors also, these figures should be 63, and 917 respectively.
[2] For the above information the Commissioner is indebted to the kindness of the Principal, John Marden, M.A., LL.D.

Lectures are given both on—

(a) *The Theory of Education.*

This subject includes such study as Physiology and Psychology as may help the Teacher to understand the development of the Child's Body and Mind; of Logic, as may lead to a clear presentation of the subjects of Instruction; of Ethics, as may guide in the formation of character.

(b) *History of Education.*

A general study of the chief educational movements in Europe to the present day, and of educational systems in actual operation in Europe, Australia, and America.

A special study of the life and writings of one or more of the greater educational reformers, *e.g.*, Pestalozzi, Froebel, Herbart.

(c) *Practice of Education.*

(I) Primary and Secondary Teachers.

School Organisation; Classification of Pupils; School and Domestic Hygiene; Time Tables; Methods of Teaching the Usual School Subjects; Drawing up of Syllabuses; Preparation of Lessons; Preparation of Apparatus and Illustrations; Setting of Home Work; Drawing up and Correcting Examination Papers; Manual Work in Schools; Organisation of School Games; the Use of the Play-ground.

(II) Primary Teachers (only).

The Principles and Practice of Kindergarten Work; the Drawing up of Schemes of Work; Preparation of Kindergarten Lessons; Methods of beginning the various School Subjects; Needlework; Clay and Cardboard Modelling; Drawing and Brushwork; Kindergarten Games; Gardening.

In addition to these, Primary students attend lectures on Nature Knowledge, Hygiene, Elementary Geometry, History, Literature, and on one foreign language.

Instruction and practice is given to all students in the use of the Blackboard, in Voice management, in systems of Physical Exercise, and in Class Singing. (Primary students are expected to possess a sound elementary knowledge of Music before they enter for training.)

The library of educational works, and the books of reference generally, are accessible to the students.

The students are required to attend regularly for practical work, to watch series of lessons given by trained teachers to the children in the School and Kindergarten.[1] After a period of probation they are allowed to teach for a short period daily under supervision.

The Kindergarten students are trained to teach in the *Transition Class*, connecting the Kindergarten with the School; and Primary and Secondary Teachers study enough of the Kindergarten to understand the foundation on which the School may build.

The above gives an indication of what is done in the way of special training.

14. *Conclusion.*—In order to understand the relationship of Secondary education in the State of New South Wales to that in Europe, a comparative study is necessary. Hence Chapters IX to XXVIII should be read. It is sufficient here to remark that whether we review the equipments, the curricula, or the scheme of training teachers, the result is the same, viz., the secondary schools of this State are not to be compared with those of Europe.

The defects of secondary education with us will be discussed in a later Chapter, viz., XXX.

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[1] It may be remarked that we are not here concerned with Kindergarten teaching. It may be mentioned, however, that the Kindergarten Union has a training college at Roslyn Gardens, Sydney, the Directress being Miss Frances Newton. The Free Kindergarten of the Union and a special practising school at the college are utilised for practical training. Miss Newton, and her assistant, Miss Jenkins, are professionally trained Kindergartners.

CHAPTER V.

CHAPTER V.

The State High Schools of New South Wales.

[J. W. TURNER.]

Establishment.—The Public Instruction Act of 1880 made provision for the establishment of High Schools in New South Wales, in the following terms :—

25. High Schools for boys may be established in which instruction shall be given in ancient and modern languages, in history, in literature, in mathematics, and in physical science, together with such other subjects as the Minister may from time to time direct.

26. High Schools for girls may be established in which instruction shall be given in modern languages, history, music, the elements of mathematics and physical science, together with such other subjects as the Minister may from time to time direct.

27. The fees to be charged and the discipline to be maintained in High Schools, and for the higher classes in Superior Public Schools, and all other matters necessary to be done for the efficient conduct of such schools shall be determined by Regulations approved by the Governor.

With little loss of time after the passing of the Act High Schools were established in Sydney. Maitland, Bathurst, and Goulburn. In the two latter towns High Schools have ceased to exist, but in the two former towns the High Schools for both boys and girls are firmly established.

High Schools, Sydney.—The Boys' Public High School, Sydney, is a comparatively new structure, of one story, containing seven fair sized class rooms, and a moderately sized general assembly room, and is situated on grounds adjacent to the Technical College, Ultimo, in the very heart of one of the busiest industrial spots in the City. The playground is asphalted and is destitute of shade trees, and in the western part of the ground a very small detached wooden building, with most meagre supply of apparatus, does duty for a gymnasium.

The Girls' Public High School, Sydney, is entered from two streets, Castlereagh and Elizabeth Streets, in close proximity to King-street, which thoroughfares are traversed by trams. The building is a very old structure of one story, and quite out of date for teaching purposes.

Regulations.—The following are the regulations affecting the administration of the State High Schools :—

High Schools.

27. Candidates shall be eligible for admission to a High School who have completed one year's attendance in the third class of a Public School, or who can pass a satisfactory examination in the course prescribed for such class in Arithmetic, Grammar, Dictation ; and in either History or Geography.

28. Examinations for admission to High Schools as well as for Scholarships and Bursaries shall be held half-yearly, in June and December. Scholarships and Bursaries may be awarded to those who gain the most marks at examination, and show the requisite proficiency, as follows :—

Scholarships.

To Sydney High Schools—7 to boys and 8 to girls in June, and 8 to boys and 7 to girls in December.
To Maitland High Schools—5 to boys and 5 to girls in June, and 5 to boys and 5 to girls in December.

Bursaries.

To Metropolitan and Sub-metropolitan children to attend Sydney High Schools, Sydney Grammar School, or any Superior Public School in city or suburbs as desired—6 to boys and 6 to girls in June, and 6 to boys and 6 to girls in December.
To country children to attend the same schools—3 to boys and 3 to girls in June, and 3 to boys and 3 to girls in December.
To Maitland High Schools—3 to boys and 3 to girls in June, and 3 to boys and 3 to girls in December.

29. Subjects of examination for Scholarships and Bursaries at the examination of June, 1904, and at subsequent examinations, shall be as follows :—

(1) *Grammar.*—To parse the more difficult words in a passage of about six lines. To distinguish the true subjects and the true predicates in sentences. To exemplify the correct usage of picked words.
(2) *Dictation.*—To write a passage of about fourteen lines, dictated from some standard author or from an ordinary newspaper, with correct spelling and punctuation.
(3) *Arithmetic.*—To solve questions in proportion, vulgar and decimal fractions, and interest.
(4) *History.*—Henry VII to Victoria inclusive ; History of Australia, as taught in Public Schools.
(5) *Euclid.*—Book I, Definitions, &c. ; Propositions 1 to 20 inclusive.
(6) *Algebra.*—First four rules.
(7) *French*.*—Macmillan's Progressive French Course, No. 1, lessons 1 to 14 inclusive, and Mrs. Boyd's "Causeries Familières," chapters 1 to 5 inclusive.
(8) *Latin*.*—Abbott's "Via Latina" to Exercise 21, page 29.

* Candidates may elect to be examined in either French or Latin, but not in both.

30. No candidate will be permitted to compete for a Sydney Scholarship or Bursary who lives nearer to a country High School than to Sydney ; *vice versa*, no Sydney candidate may compete for a country Bursary or Scholarship.

Every applicant for either a Scholarship or a Bursary must state in his application what school he intends to enter.

31. Bursars electing to attend a High School, and all Scholars are expected to attend the High School nearest by a practicable route to their places of residence. In exceptional circumstances, however, the Minister may, on application being made, sanction a departure from this rule. The application should accompany the form notifying intention to compete.

32. A scholarship will be tenable for three years, subject to good reports from teachers, and will entitle a pupil to a free grant of text-books and to free education in a High School. The examination for scholarships will be open to all boys and girls under 14 years of age on the day of examination.

33. A Bursary will be tenable for three years, subject to good reports from teachers, and will entitle a pupil to a free grant of text-books and to free education in a High School, a Superior Public School, or in the Sydney Grammar School. When a pupil holding a Bursary must necessarily board away from home in order to attend one of these schools, an allowance not exceeding £30 a year, in addition to free education and text-books, will be made, but when it is not necessary on account of distance, to board away from home, the allowance will not exceed £10 a year.

34. No pupil will be awarded a Bursary whose parents or guardians are in a position to pay for his education; but, subject to this proviso, the examination for Bursaries will be open to all boys and girls under 14 years of age who have attended a Public School with reasonable regularity for the two years preceding the date of examination.

35. The fee to be charged at a High School shall be £3 3s. per quarter, payable in advance.

36. The fees shall in no case be the property of the teachers, but shall be forwarded to the Cashier for payment into the Consolidated Revenue Fund.

37. The parents or guardians of candidates for Bursaries or Scholarships must fill in and forward to the Under Secretary the necessary forms of application at least three weeks before the date of examination. Such forms may be obtained at the Department of Public Instruction.

A synopsis of the subjects taught in the Boys' Public High School, Sydney, together with the syllabus of work from July to December, 1903, is set forth in the following pages :—

SYNOPSIS, SYDNEY BOYS' PUBLIC HIGH SCHOOL.

Subject.	No. of Hours per Week devoted to each Subject.						
	Form VI A.	Form VI B.	Form V A.	Form V B.	Form IV A.	Form IV B.	Form III A.
Latin	5	5	5	5	5	5	5
French	3	3	4	4	4	4	4
English	2	2	3	3	3	3	3
English Literature	1	1	...	...	...	...	...
Ancient History	2	2	...	...	...	...	...
English History	...	...	3	3	2	2	2
Physical Geography	...	...	...	...	2	...	...
Geography	...	...	...	...	...	2	2
Statics and Dynamics	2	2	...	...	...	...	...
Trigonometry	2	2	2	2	...	...	...
Algebra	2	2	3	3	3	3	3
Arithmetic and Mensuration	2	2	3	3	4	4	4
Geometry	2	2	2	2	2	2	2
Physics	2	2	2*	2*	...	...	...
Special Subjects	...	...	...	...	...	...	...
Greek	2	...	3	2	2	2	...
German	2	2	2	2	2	2	...
Total	29	27	29	29	29	29	25

*The boys who take Physics do not learn English History.

SYLLABUS OF WORK, SYDNEY BOYS' PUBLIC HIGH SCHOOL, FROM JULY TO DECEMBER, 1903.

Form VI A.

Greek.—*Author*: Plato, The Apology. *Composition*: Sidgwick's Greek Prose Composition. *Translation* and composition at sight.

Latin.—*Authors*: Cicero, Pro Sestio; Virgil, Aeneid, Book vi. *Composition*: Continuous passages up to Senior Standard. *Sight translation.*

Ancient History.—*Oman's History of Greece*, and Bury's History of Greece: From the Supremacy of Pericles to the Downfall of Athens, B.C. 404. *How and Leigh's History of Rome*: From the Tribuneship of Ti. Gracchus to Death of Julius Cæsar *Shuckburgh's History of Rome*: From Death of Cæsar to Battle of Actium.

French.—*Authors*: Coppée, Contes Choisis; Corneille, Cinna. *Composition*: Blouët's Class Book of French Composition, full course. *Composition and Translation* at sight. *French Literature*: Saintsbury, French Historical Grammar.

German.—*Authors*: Heine, Harzreise; Grillparzer, Sappho. *Composition*: Buchheim's German Composition and Heimann's German Composition, full course. *Composition and Translation* at sight. *German Literature*: Scherer. German Historical Grammar, Trechmann.

English.—*Authors*: Shakespeare's Tempest, Arnold's Poems. *Literature*: Gosse's Modern Literature, and Stopford Brooke's Primer. From Chaucer to the present day.

Statics.—Moments, Couples, General Conditions of Equilibrium, Centre of Gravity, Machines, Friction, Work, Smooth Hinges, Funicular Polygon, Tension of Elastic Strings, Graphic Solution, The Wedge, Virtual Work.

Dynamics.—The Laws of Motion, Impulse, Work and Energy, Parabolic Motion, Projectiles, Collision of Elastic Bodies, The Hodograph and Normal Accelerations, The Conical Pendulum, Circular Motion, Simple Harmonic Motion, Pendulums.

Trigonometry.—Including Solution of Triangles and Circles, Summation of Series, De Moivre's Theorem, Exponential Values of Sine and Cosine, Factors of x^n-1, Theory of Proportional Parts, Geometrical Applications, Antiparallels, Cosine Circle, &c.; Brocard Points.

Algebra.—Including the Progressions, Combinations and Permutations, Binomial Theorem, The Properties and Use of Logarithms, Summation of Series, Indeterminate Equations of the first degree, Interest and Annuities, Exponential and Log., Series, Easy Limits.

Geometry.—Euclid Books i, ii, iii, iv, vi, and xi, with Exercises up to Senior Standard.

Arithmetic and Mensuration.—Selected questions to Standard of University Senior Public Examination.

Physics.—Properties of Matter, Sound, Heat, and Light. Electricity and Magnetism.

Form VI B.

Latin.—*Author*: Livy, Book xxvi, ch. 1-37. *Composition*: Bradley's Arnold—Book Work, and Exercises 49 to 59, continuous passages. *Translation at sight.*

Ancient History.—*Oman's History of Greece*: From the Legislation of Solon to The Outbreak of the Peloponnesian War. *How and Leigh's History of Rome*, Chapt. xxxiii to xli: From The Tribuneship of Ti. Gracchus to Death of Julius Cæsar.

French.—*Berthon's* Specimens of Modern French Prose. *Composition*: Selections from Blouët's Class Book. *Composition and Translation* at sight.

German.—*Hauff*: Das Wirtshaus im Spessart. *Composition*: Otto's Materials for German Composition. *Translation* and Continuous Prose Composition at sight.

ENGLISH.—*Shakespeare's* Coriolanus, Acts I, II, III, IV, Sc. 1-4. *Literature*: Writers before Conquest. Metre and Character of Early English Poetry: Beowulf, Caedmon, Cynewulf. War Poetry: Baeda, Alfred, and Engilsh Chronicle. From Conquest to Chaucer: Religious and Story-telling Poetry, Literature and Friars, English Story-telling, Layamon, Cycles of Romance, English Lyrics, King's English, Langland, Wyclif, Chaucer.

STATICS.—Definitions, Parallelogram of Forces, Composition and Resolution of Forces, The Triangle of Forces, Lami's Theorem, Polygon of Forces, Rectangular Resolution of Forces, Parallel Forces.

DYNAMICS.—Definitions, Parallelogram of Velocities, Triangle, Polygon and Parallelepiped of Velocities, Rectangular Resolution of Velocities, Relative Velocity, Angular Velocity, Acceleration, Motion under initial velocity and constant acceleration, Motion under gravity, Motion down Smooth Inclined Plane, Lines of Quickest Descent.

TRIGONOMETRY.—Ratios of two angles, S and T formulæ, Angles Unlimited in Magnitude, Multiple and sub-Multiple Angles, Solution of Equations (subsidiary angle), Inverse Notation, on Sides and Angles of a Triangle, Heights and Distances, Logarithms (elementary), Solution of Triangles.

ALGEBRA.—Ratio and Proportion, Variation, The Progressions, Piles of Shot, Summation of Series involving Σn, Σn^2, Σn^3, Scales of Notation, Surds and Imaginary Quantities, Use of Cube Roots of Unity, Theory of Quadratics and Miscellaneous Theorems.

GEOMETRY.—Euclid—Books I, II, III, IV, V (Definitions), VI with exercises. Theorems concerning the Triangle and its Circles, Nine Points Circle, Maxima and Minima.

ARITHMETIC.—Questions from Haugh, Murray, Lock and Pendlebury. Pendlebury—Chapter on Problems. Selected questions on Clocks, Motions round a Circle, Trains, Boats, and Streams.

MENSURATION.—Volumes of Pyramid or Cone, Frustum of Pyramid or Cone, Wedge, Prismoid, Sphere, Zone and Segment of Sphere, with practical applications.

PHYSICS.—Electricity and Magnetism as required for University Senior Public Examination.

FORM V A.

GREEK.—*Author*: Xenophon, Hellenics Bk. II. *Initia Graeca*, pt. I, Ex. 45-65. Contracted Verbs, and Verbs in $\mu\iota$. *Composition* and Translation at sight.

LATIN.—*Author*: Cicero de Amicitia, ch. I-XXI. *Composition*: Bradley's Arnold to Ex. XXII. Easy passages of Continuous Prose. *Translation at sight.*

FRENCH.—

Upper—*Author*: Au pôle en ballon, pp. 1-71. *Composition*: Macmillan's Second Year, Ex. XXIV-L, with Book work. Macmillan's Third Year, Ex. I-VIII. Continuous passages translated from Author.

Lower—*Author*: Au pôle en ballon, pp. 1-62. *Composition*: Macmillan's Second Year, Ex. XXIV-XL, with Book work. Passages for translation modelled on original.

ENGLISH.—*Author*: Shakespeare's Richard II, Acts I, II, III, IV, V, Sc. 1-3. *Paraphrasing*: Composition, Essays, &c.

GERMAN.—*Author*: Hermann der Cherusker. *Otto's German* Grammar, Les. 38-51, on use of the Definite Article, Tenses of Verbs, Subjunctive Mood, Prepositions. *Composition* and Translation at sight.

ENGLISH HISTORY.—*Henry VII to George II*, with special attention to cause and effect, the historical importance of chief events, battles, &c., and the historical position of the chief men, explaining the present by reference to the past.

TRIGONOMETRY.—Measurement of Angles, Circular Measure, Trig. Ratios of 0°, 30°, 45°, 60°, 90°; Practical Applications, Easy Identities, Trigonometrical Equations, Use of Signs + and −, General expressions for Angles in a Quadrant, Ratios of two Angles, Sin. (A ± B), S and T formulæ, Ratios of Multiple Angles.

ALGEBRA.—To Standard of University Junior Public Examination in Factors, Fractions, Equations of one unknown Quantity, Simple and Quadratic, and easy Problems leading to such Equations, Easy Simultaneous Equations and Problems, Indices, Surds, Theory of Quadratic Equations, Solution of Easy Equations by Graphs.

GEOMETRY.—*Euclid*: Revision of Books I, II, and III, with full Book-work. B IV, 1-10. Deductions on Books I, II, and III.

ARITHMETIC.—Unitary Method, Contracted Methods in Multiplication, Division, and Square Root, Time and Work, Interest and Discount, Profit and Loss, Stocks and Shares, Clocks, Trains and Thermometers to Standard required by University Junior Public Examination.

MENSURATION.—Practical Questions on rooms, fields, boxes, tanks, rivers. Areas of circular rings, sectors, segments, and similar figures. Volumes of parallelepipeds, prisms, cylinders, solid ring, pyramid, cone, frustum of pyramid or cone.

PHYSICS.—*Magnetism*: Natural and Artificial Magnets, Making Magnets, Magnetic Attraction and Repulsion, Induction, Broken Magnets, Magnetic Curves and Lines of Force, Bar and Horse-shoe Magnets, Consequent Poles, Keeping Magnets, Geographic and Magnetic Poles, Inclination Compass. *Current Electricity*: Simple Cell, Chemical Action of Cell, Bichromate, Leclanché, Dry and Daniel's Cells, Local Action—cause and remedy—Polarisation—cause and remedies—Cells in Series and Parallel, Ohm's Law $-\frac{E}{R} = C$, Oersted's Experiment—energy outside Conductor, Electro-Magnets, Galvanometers, Units—quantity, current, EMF resistance and power, Fall of Potential.

SPECIAL SUBJECTS.—PUBLIC SERVICE CLASS.

GEOMETRY.—Euclid, Bks. I-IV. Definitions of Bk. V. Book VI. Easy exercises on foregoing.

ENGLISH.—*Shakespeare's* Richard II, Acts III, IV, and V. *Précis Writing. Essays* and Official Correspondence.

HISTORY.—*English History* from 1745 to the present time. Australian History.

GEOGRAPHY.—*General*: Australia and other British possessions in detail. Special reference to Trade and Industries. *Mapping.*

Other subjects taken with the regular classes.

FORM V B.

GREEK.—*Author*: Xenophon. Hellenics, Bk. II, Ch. 1 and 2. *Initia Græca*, Pt. I, Ex. 30-45. Pronouns, Active and Passive Voice of Verbs—Vowel Stems, Labial, Guttural, Dental, and Liquid.

LATIN.—*Author*: Cicero de Amicitia, to end of chapter 15. *Bradley's Latin Prose*, to Ex. 20. *Easy Composition* and Translation at sight.

FRENCH.—*Author*: Au pôle en ballon, to page 41. *Composition*: Macmillan's Second Year, to Ex. 35, with Book-work. Sentences on Syntax and Idioms in Author.

GERMAN.—*Author*: Hermann der Cherusker, Ch. 1-3. *Otto's German Grammar*, Les 19-27. Comparison of Adjectives, Numerals, Weak Verbs, Relative Pronouns, Strong Verbs.

ENGLISH.—*Author*: Shakespeare's Richard II, Acts I, II, III, Sc. 1-3. *Paraphrasing*: Composition Essays.

ENGLISH HISTORY.—Taken with V A.

TRIGONOMETRY.—On Units and Measurement, Angular Measurement, Radian Measure, Trigonometrical Ratios, Elementary Formulæ and Easy Identities, Ratios of 0°, 30°, 45°, 60°, 90°, and easy application to Heights and Distances; Solution of Easy Equations.

ALGEBRA.—To Standard of University Junior Public Examination in Factors, Fractions, Easy Equations of One Unknown, Simple and Quadratic, and easy problems leading to such Equations. Easy Simultaneous Equations of Two Unknowns.

GEOMETRY.—Books I-III, with alternative proofs; bookwork and exercises on Book I. Easy exercises on Propositions in Book III.

ARITHMETIC.—Unitary Method, Time and Work, Interest and Discount, Profit and Loss, Stocks and Shares.

MENSURATION.—Quadrilaterals, Circles, Easy questions in sectors and segments, circular rings. Volume of parallelepiped prism, cylinder; and practical questions in papering, carpeting, and gardens.

PHYSICS.—Taken with V A.

FORM IV A.

Form IV A.

Greek.—*Initia Græca*, Part I, Ex. 18–35, Third Declension, Nouns and Adjectives, Irregular Substantives and Adjectives, Comparison of Adjectives, Pronouns.
Latin.—*Abbott's Via Latina*, Ex. 60 to end, with full Book work. *Scalæ Primæ.*
French.—*Author*: Contes de Fées—La Barbe Bleue, Le Petit Chaperon Rouge, La Belle au Bois Dormant. *Macmillan's Second Year*, to Ex. 20. Rules of Subjunctive and Infinitive.
German.—*Otto's German Grammar*, Les 8–20. Irregular Plurals, Auxiliary Verbs, Forms of the Adjective.
English.—*Shakespeare's* Richard II, Acts I, II, Sc. 1 and 2. Grammar, Paraphrase, References, parsing, and analysis, Derivations, Repetition. *Essays.*
English History.—*The Stuart Period*—Beginning of House of Hanover to George II.
Algebra.—Resolution into Factors of expressions having the form ax^2+bx+c, a^2-b^2, $a^3\pm b^3$, H.C.F. and L.C.M. Simple and Easy Simultaneous Equations in two variables. Easy problems. Harder Simple Equations, and Harder Factors. Miscellaneous Fractions.
Geometry.—Euclid, Books I–III, with easy exercises on Book I, and alternative proofs on Books I and II.
Arithmetic.—Questions in earlier rules, Decimal Fractions, Interest—Simple and Compound, Discount and Present Value (simple interest). Finding Time, Rate, and Principal in S.I. questions. Easy problems.
Mensuration.—Papering and Carpeting Rooms. Areas of Triangles, Circles, Surface of Cylinder. Area of regular Hexagon. Practical questions.
Physical Geography.—Earthquakes, Volcanoes, Wrinkling of Earth's Crust, Igneous and Sedimentary Rocks, Metamorphic Rocks, Weathering, Wells and Springs.

Form IV B.

Greek.—*Initia Græca* Part I, Ex. 1–10. First, Second, and Third Declensions.
Latin.—*Abbott's Via Latina.* Ex. 32–62. Grammar and Accidence embraced in this Section.
French.—
Upper—*Macmillan's First Year*, Ex. 28 to end. *Macmillan's Second Year*, to Ex. 7.
Lower—*Macmillan's First Year*, to Ex. 40.
German.—*Otto's Grammar*, Les. 1–8. The five Declensions and Irregularities of same.
English.—*Macaulay's Lays* of Ancient Rome: Horatius and Battle of Lake Regillus. *Parsing, Analysis*, paraphrase, meanings and derivations, allusions, repetition. *Essays and Letter-writing.*
English History.—Edward VI to Commonwealth.
Algebra.—Elementary Rules, Simple and Simultaneous Equations (of the first degree). Easy problems. H.C.F. and L.C.M., Easy Factors and Fractions.
Geometry.—Euclid: Revision of Book I, Book II. Selected exercises from Book I.
Arithmetic.—Exercises in G.C.M. and L.C.M., Simplification of Vulgar and Decimal Fractions, Problems in Buying and Selling, Simple Interest, Revision of Earlier Rules.
Mensuration.—Areas of triangles, rectangles and rectilineal figures, and practical questions thereon.
Geography.—British Islands, India, British South Africa, British North America, Egypt, New Zealand, general revision of Australia, Trade routes, Mapping.

Form III A.

Latin.—
Upper—*Abbott's Via Latina*: To Ex. 43, with all Book work inclusive. Regular Verbs (Active Voice). Principal Rules for Subjunctive.
Lower—*Abbott's Via Latima*: To Ex. 32. Declensions, Comparison of Adjectives, Numerals, and Pronouns.
French.—*Macmillan's First* French: To Ex. 23. Verbs être and avoir. Cardinal Numbers.
English.—*Macaulay's* Battle of Lake Regillus, Horatius to Stanza 30. *Parsing, analysis*, paraphrasing, derivations, meanings, references, repetition. *Easy Essays.*
English History.—From Edward I to Henry VII.
Algebra.—The Four Rules, Symbolical Expression, Substitution of Numbers, Easy H.C.F. and L.C.M. Easy Factors and Simple Equations.
Geometry.—Euclid: Book I, with very easy exercises.
Arithmetic.—Compound Rules, Easy Vulgar and Decimal Fractions, Practice, Proportion, Bills and Household Accounts. Miscellaneous practical questions.
Mensuration.—Areas of Rectangles and Squares, Walls of Room, Finding sides of right-angled triangle. Application of preceding rules.
Geography.—Australia and New South Wales in moderate detail, Principal Trade Routes of Australian interest. Mapping within these limits.

CHAPTER VI.

CHAPTER VI.

Outlines of British Secondary Educational Systems.

[G. H. KNIBBS.]

1. *Introductory.*—Although secondary education in the State of New South Wales is not exactly identical with that provided in the United Kingdom, the traditions and methods of the latter place have, as might be expected, imposed themselves upon the features of our educational methods. The general organisation of schools providing secondary education exhibits considerable variety at both places, so much so that, in one sense, it is almost incorrect to speak of the *organisation* of English secondary education. It has, of course, never been reduced to a unified system. This fact is vividly exhibited in the impossibility at the present time of introducing into the United Kingdom the "*Maturité*" of France or Switzerland, the "*Arbiturienten Examen*" of Germany and Austria, the "*Absolutorium*" of Southern Germany, or the similar examinations in other European countries, under the conditions obtaining in those countries.

The absence of unity in the educational system reveals itself in this very fact, for obviously the director, principal, or headmaster of a lower school, if efficient, is the most competent person, and, in fact, in the nature of the case, the only person fully qualified to pass judgment upon the question, as to whether a particular pupil is qualified to enter upon the next higher stage in his educational career. He alone can judge of the pupil's career as a whole.

The English method of holding *Matriculation Examinations* for the purpose of ascertaining the adequacy of the preparation for entering upon a University career, would be *anomalous in a unified system;* and, unfortunately, it is educationally vicious, forasmuch as it leads to "*cramming*," an educational process which, as is well known, militates against thoroughness. Hence English secondary education, as a stepping-stone to higher education, is defective.

Another conspicuous limitation of the educational system of the United Kingdom is the absence of any adequate elementary scientific teaching which might constitute a basis for the higher forms of general and technical education. A third and allied defect is the absence of co-ordination between the various elements of secondary programmes.

The spirit which had its origin in the days of Scholasticism has left a mark upon English education which is only too visible to-day. The following passage, translated from "Die Reform des höheren Schulwesens in Preussen" (Chapter X, section 1, page 138), which may be regarded as applying to some extent to England as well as to Germany, will exemplify what is meant:—

> "Latin up to the 18th century was for the Church, for Science, and Politics, a language of universal significance and of direct utility, and according to German opinion it was on this account that the rôle it played in the higher schools was so weighty that each day one read, wrote, and spoke it—*nulla dies sine linea.* Ciceronian purism intensified the grammatical formalism, and the aim of the schools was an exalted rhetorical style, rather than a style of simple relation. And to be 'learned' meant practically a sufficient command of Latin to deliver oneself in Ciceronian Latin."

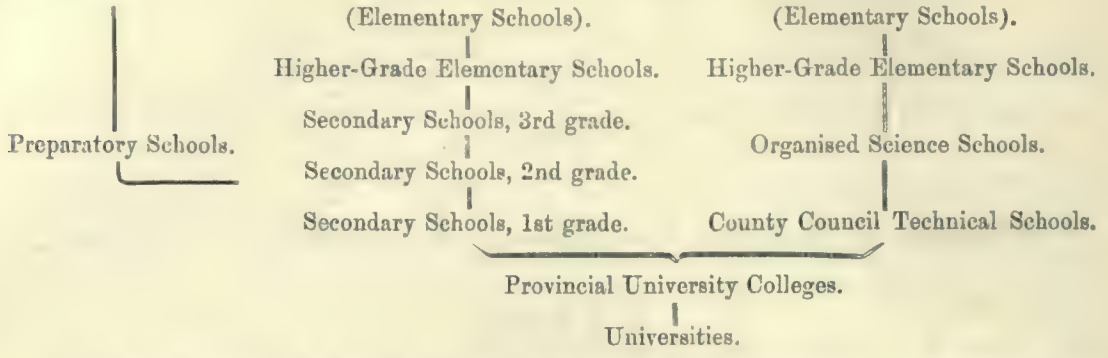
Times have changed. The rôle of the classical languages in the modern world is a totally different one from what it was mediævally. No one can claim that it is *par excellence*, the foundation of all education. Great bodies of knowledge in the realm of mathematics, natural history, and the physical sciences have been won by human genius and research. To the pedant it may be true that all this is of little moment, but it cannot be so to the impartial critic. Not unfrequently those whose education has practically been restricted to a knowledge of classical languages fail to perceive altogether how limited is such a type of education. That it falls short of a normal idea of liberal education—to say nothing whatever of its practical inefficiency and very obvious limitations—has become a mere truism.

The conservatism of the classic scholar is responsible for the very marked shortcomings not only of the secondary but also of the primary educational system of the United Kingdom. For the educational influences have, to a great extent, been determined by men of classical culture. In this connection it should not be forgotten that even to-day there is an undercurrent of contempt for science in the great public schools of the mother country.

In reviewing secondary education in Great Britain, it is not unimportant to bear in mind that the primary schools were under no compulsion, nor were they encouraged to provide elementary scientific education; and further, that in the secondary schools themselves there has been a tendency to stimulate the classical and literary side of all education at the expense of the mathematical and scientific sides. Certainly, it may be said that even at the present day English secondary education does not sufficiently reflect the great features of modern life, nor does it betray any adequate consciousness of the progress of recent history in respect of scientific, commercial, industrial, and, it may be added philosophical, development.

For this reason no attempt will be made to give an exhaustive outline of English secondary education. It will suffice to indicate its recent trend. In other words, the Commissioners will restrict themselves to an endeavour to shew that English education is *now* reacting to those better defined necessities of every system that professes to liberally equip men for their life-work and their duty.

2. *The Organisation of the English System.*—The following is a representation of the general scheme of English education as it presented itself to the mind of a competent German Educationist.[1]



A real *classification* of English secondary education is a matter, however, of difficulty, because (whether wisely or not need not here be considered) the secondary schools take into account social distinctions, they discover more or less interest in the exigencies of technical education, and in educational function they are by no means identical.

If we consider the period of education from 14 years of age up to the entrance into a University as the secondary period, it will be necessary to include the higher grades of teaching in the elementary schools, forasmuch as they deal with education up to at least the age of 15 years.. These schools often embrace in their curricula such subjects as history, mathematics, physics, Latin, and French. Some idea of schools of this type may be obtained from Chapters XI and XII in the Interim Report of the Commissioners (see pages 106–125).

It is stated by an English Commission on secondary education—to which reference will be hereinafter made—that their witnesses very variously and vaguely conceived the matter, the most common criterion being *age ;* and the education given to boys and girls between the ages 14 and 19 was generally held to be secondary.

In Chapter LIV of the Interim Report, pages 469–474, of the Commissioners (presented 3rd December, 1903), it will be seen that if one adopts the age 14 as dividing the primary from the secondary period, it will, on the whole, be satisfactory. This is the basis of the classification of the preceding chapter (II).

Secondary Schools have been divided into *grades*, of which as many as *three* have been proposed; and while it is generally true that those of the first grade under such a division are socially exclusive, it is not invariably so. First grade schools, like King Edward's, Birmingham, and the Bradford Grammar School, have successfully attracted to themselves children from the Board schools.[2]

There is, further, a steadily-growing tendency to the abandonment of any association of difference of grade in education with distinction of class.

The matter of classification may be treated in several ways, as, for example :—

(i) According to origin and constitution.
(ii) According to educational function.

As regards (i) secondary schools may be classified as follows :—

(*a*) Public ..... (1) Endowed Schools. (2) Municipal or County Schools. (3) Public Elementary Schools of higher grade.

(*b*) Proprietary. (1) Schools owned and managed by public companies. (2) Schools held by private trustees or shareholders. (3) Schools owned by religious denominations.

(*c*) Private ..... (1) Schools managed directly by the proprietor. (2) Schools in which the principal has a pecuniary interest.

In regard to (*c* 2), it may be said that there is a sense in which the principal or head-master may be deemed always to have an interest. It is pointed out by the English Commission that—

> "The head-master of a public school may benefit, in his own way quite as much as the master of a private school, by the school's success. In the case of boarding-houses, or under that most undesirable state of things in which schools are farmed by the governors to the master, there is no distinction in principle between public and private schools, as regards the financial interest of the master."

With regard to (ii), viz., classification according to educational function, the only proposal of any importance is to divide the schools into three *grades*, viz. :—

(*d*) 1st Grade ; (*e*) 2nd Grade ; (*f*) 3rd Grade.

These several grades have been defined as follows :—

(*d*) 1st Grade—Schools whose function is the education of a learned, literary, professional, or cultured class, as for example, those belonging to the so-called learned professions, those who intend to take holy orders, lawyers, physicians, teachers, littérateurs, those who desire to follow scientific pursuits, to enter public life, the higher civil service (home or foreign), etc. In general, the educational career of these would terminate in the universities.

(*e*)

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[1] Karl Breul, M.A., Litt.D. (Cambridge) ; Ph.D. (Berlin).

[2] Mr. Vardy stated that 20 per cent. of the boys who during the last ten years have taken leaving exhibitions from King Edward's School have come from the public elementary schools. See page 133 of Report, 1895.

(*e*) 2nd Grade—Schools whose aim is to provide education for those who desire to engage more directly in the higher industrial and commercial life of the community.

(*f*) 3rd Grade—Schools whose office it is to educationally equip for the higher handicrafts, for the ordinary commerce and industry of shops, and towns. These are represented by the Higher Grade Elementary Schools.

These various grades may be divided again as follows:—

(*d*) 1st Grade—(1) Boarding Schools; (2) Day Schools.
(*e*) 2nd Grade—(1) Modern; (2) Science; (3) Technical.
(*f*) 3rd Grade—(1) Higher Grade Board Schools; (2) Higher Grade Elementary or Primary Schools.

We may discuss these in the ascending order of importance—that is, to take the last first.

3. *Higher Grade Elementary Schools.*—One of the finest types of third-grade secondary schools is the Leeds Central Board school. Some reference to this has been made in Chapters XI and XII of the Interim Report, as previously stated. This may be supplemented by the information afforded in the prospectus of the "Higher Grade School." This school, on a basis of elementary education, proposes to build a system of higher education such as "will train pupils for industrial, manufacturing, and professional pursuits." The prospectus indicates three divisions, as hereunder:—

(i) The *Classical* (or Professional), in which Latin, Mathematics, Science, and Drawing form the chief subjects.
(ii) The *Modern* (or Mercantile), in which French or German, Commercial Geography, Mathematics, Science, and Drawing receive most attention.
(iii) The *Scientific* (or Technical), in which Mathematics, Science, and Drawing form the leading subjects.

There are two sections in this school (Leeds Higher Grade), viz., the "*Elementary*" and the "*Higher.*" The work in the former is conducted in accordance with the requirements of the education code, and is divided into three divisions, viz.:—

(a) *Junior Division*, corresponding to "Standards II, III, and IV."
(b) *Middle Division*, corresponding to Standards V, VI."
(c) *Senior Division*, corresponding to Standard VII."

The subjects in these several divisions are as follows:—

(a) Scripture, English, Writing, Dictation, Arithmetic, Elementary Geography, History, Grammar, Object Lessons, Gymnastics, Hand-and-Eye Training, Drawing, Music, Needlework for Girls.
(b) Scripture, English, Writing, Dictation, Arithmetic, Grammar, Composition, Geography, History, Elementary Mathematics, Elementary Latin, Science Lessons, French, Drawing, Gymnastics, Manual Instruction, Music, Needlework, Cookery, and Domestic Science for Girls.
(c) Scripture, English, Writing, Dictation, Arithmetic, Grammar, Composition, Geography, History, Elementary Mathematics, Elementary Latin, French, Drawing, Gymnastics, Manual Instruction, Music, Science Lessons, Needlework, Cookery, and Domestic Science for Girls.

The higher section, intended for scholars beyond the standards of the Education Code, occupies a period of four years, and is arranged so as to meet the requirements of the future occupation of the pupil. The first and second years are known as the "elementary courses," the third and fourth as the "advanced courses." The following is a synopsis of them:—

First Year—Elementary.

Boys and Girls.

English.—A period of English History and Literature, and the study of an English Classic.
Latin.—Latin Grammar and Elementary Composition, Easy Translation.
Mathematics.—Arithmetic, Algebra, Euclid.
French.—Thorough Revision of Grammar, Normand (*L'Emeraude des Incas*), Stahl (*Un Anniversaire à Londres*).
Science.—Inorganic Chemistry (Theoretical and Practical), Physics (Theoretical and Practical).
Drawing.—Practical Plane and Solid Geometry, Freehand.

Boys only.

Commercial.—Shorthand, Geography (British Islands and British North America), Book-keeping.
Manual Instruction in the Workshop.
Gymnastics.

Girls only.

Geography (British Islands and British North America).
Cookery, Needlework and Cutting-out, Dressmaking.
Calisthenics.

Second Year—Elementary.

Boys and Girls.

English.—A period of English History, a period of English Literature, with the study of an English Classic.
Latin.—Latin Grammar and Composition, First Reader, *Gradatim.*
Mathematics.—Algebra, Euclid, Plain Trigonometry.
French.—Grammar, Repetition of Easy Poems, Laurie (*Une Année de Collège à Paris*), Labiche (*Voyage de M. Perrichon.*)
German.—Grammar, Easy Translation.
Science.—Practical Plane and Solid Geometry, Inorganic Chemistry (Theoretical and Practical), Physics (Theoretical and Practical).
Drawing.—Freehand, Linear Perspective, Model, Elementary Shading. Boys

Boys only.

Commercial.—Business Methods, Shorthand, Geography (Europe and India).
Manual Instruction in the Workshop (Woodwork and Metalwork)
Gymnastics.

Girls only.

Geography (Europe and British India).
Cookery, Needlework and Cutting-out, Dressmaking.
Calisthenics.

Third Year—Advanced.

Boys and Girls.

English.—Modern English History and Literature, History of the English Language.
Latin.—Latin Grammar and Composition, Cæsar (*De Bello Gallico*, Books IV, V), Nepos (*Lives*).
Mathematics.—Algebra, Euclid, Plane Trigonometry,
French.—Conversation and Commercial Correspondence, Molière (*Le Bourgeois Gentilhomme*), Alfred de Vigny (*Cinq-Mars*).
German.—Grammar, Conversation, Grimm (*Märchen*).

Boys only.

Science.—Electricity and Magnetism (Theoretical and Experimental), Inorganic Chemistry (Theoretical and Practical). Practical Plane and Solid Geometry, Machine Construction.
Art.—Mechanical Drawing, Shading from Objects and Casts.
Commercial.—Geography (British Empire), Shorthand.
Manual Instruction in the Workshops (Woodwork and Metalwork).
Gymnastics.

Girls only.

Science.—Electricity and Magnetism (Theoretical and Experimental), Inorganic Chemistry (Theoretical and Experimental), Practical Physics.
Art.—Shading from Objects and Casts.
Commercial.—Geography (British Empire).
Cookery, Needlework and Cutting-out, Dressmaking.
Calisthenics.

Fourth Year—Advanced.

Boys and Girls.

English.—History of the English Language, Modern Literature and History.
Latin.—Latin Grammar and Composition, Livy, book XXI., Ovid, *Metamorphoses*, VIII., Cæsar, *De Bello Civili*, Book III.
Mathematics.—Algebra, Euclid, Trigonometry, Co-ordinate Geometry.
French.—Grammar and Composition, Conversation, La Fontaine, *Fables*, Liv. IV., V., Labiche, *Voyage de M. Perrichon*, Berthon, *Specimens of Modern French Poetry.*
German.—Grammar, Conversation, Goethe *Hermann und Dorothea.*

Boys only.

Science.—Practical Plane and Solid Geometry, Heat (Theoretical and Experimental), General Physics, Organics and Inorganic Chemistry (Theoretical and Practical.)
Commercial and General Geography.
Art.—Mechanical Drawing, Shading from Objects and Casts.
Manual Instruction in the Workshops, Woodwork and Metalwork.
Gymnastics.

Girls only.

Science.—Organic and Inorganic Chemistry (Theoretical and Practical), Heat (Theoretical and Experimental), General Physics.
Commercial and General Geography.
Art.—Shading from Objects and Casts.
Cookery.—Needlework and Cutting-out—Dressmaking.
Calisthenics.

The above will give a sufficient indication of the scope of schools of this character without going into detail as to the apportionment of time for each subject.

4. *Proprietary High Schools.*—Another class of school found in England is what may be called Proprietary Schools. Amongst the finest of these may be mentioned the High Schools of the "Girls' Public Day School Company," founded in 1872. These are day schools, but have attached licensed boarding-houses. Here it may be mentioned that they vary somewhat in character, some being classic and literary, others more specially scientific, while others again aim at giving general education. The following list will shew their distribution over England:—

1, Bath High School; 2, Birkenhead High School; 3, Blackheath High School; 4, Brighton and Hove High School; 5, Bromley High School; 6, Carlisle High School; 7, Clapham High School; 8 Clapham Modern School; 9, Croydon High School; 10, Dover High School; 11, Dulwich High School; 12, Highbury and Islington High School; 13, Ipswich High School; 14, Kensington High School; 15, Liverpool High School; 16, Newcastle (Central) High School; 17, Norwich High School; 18, Nottingham High School; 19, Nottingham and Bayswater High School; 20, Oxford High School; 21, Paddington and Maida Vale High School; 22, Portsmouth High School; 23, East Putney High School; 24, Sheffield High School; 25, Shrewsbury High School; 26, South Hampstead High School; 27, Streatham Hill and Brixton High School; 28, Sutton High School; 29, Sydenham High School; 30, Tunbridge Wells High School; 31, Wimbledon High School; 32, York High School.

Besides this Company may be mentionod "The Boys' Public Schools Company," "The Church Schools' Company," and others. The gymnasiums, science rooms, and laboratories are often very finely equipped, especially in the more recent schools. Other schools that may be mentioned as providing "secondary education," are the "Greycoat Hospital," "Christ's Hospital" (Blue-coat School), and similar institutions.

5.

5. *Private Secondary Schools.*—" Private Schools," or " Private Adventure Schools " are also an important part of the machinery of English higher education, and exist in great numbers. As is well known, the quality of the education given in these varies greatly and not unfrequently it varies inversely as the pretentiousness of the prospectus. The private schools are under neither municipal nor State control, a fact which is regarded by many as indicating insufficient interest in the question of public education. The highest type of private school is probably, in many respects, really the educational equal of the best English public Secondary Schools, though lacking their reputation, and with minor modifications follows the lead of other schools of reputation in regard to curricula, the qualifications of the teaching staff, and general traditions.

6. *Endowed Grammar Schools.*—At the head of endowed schools of the first degree are the so-called *Public Schools.* The number of these is given in the Public Schools' Year-book and Whitaker as about sixty. The nine great public schools are (1) Eton, (2) Winchester, (3) Harrow, (4) Charterhouse, (5) Westminster, (6) Rugby, (7) Shrewsbury, (8) St. Paul's, and (9) Merchant Taylors'. The first seven are boarding-schools and the last two day-schools. The name " public school," however, has come to imply practically any school of high social rank, and, it may be said, charging high fees, and such proprietary schools, for example, as the Marlborough, Cheltenham, Clifton, Hailebury, Malvern, and Rossall Colleges are also included under the title. Great stress is laid on the development of, what is called "*public school spirit*," that is to say, on the creation and fostering in the pupils of strong ties of common sympathy and friendship, on the ground of belonging to the school. Thus the " public school " is an important social factor in English life, and, as pointed out by a German critic, it, at least, tends to diminish the mischief of the purely mercenary spirit. " Er ist auf einer " public school " erzogen worden wirkt wie ein Zauberwort in den weitesten Kreisen des Landes. (" He is a public school man " acts like a magic word in the furthest circles of the country) said the same critic. This comment certainly reveals one of the elements of British solidarity, whatever opinion may be entertained as to the desirability or equity of the preference shewn through life for schoolfellows in regard to all sorts of positions, and with candidates of all degrees of qualification.

The Public Schools may be divided into four kinds, viz.:—

(i) Mixed schools—*i.e.*, boarding and day schools combined. These are the most numerous, and are situated either in or in the neighbourhood of towns in the finest localities.
(ii) Boarding schools in the country—*e.g.*, Charterhouse, Marlborough, Wellington, etc.
(iii) Day schools in the towns—*e.g.*, Merchant Taylors' and City of London School, the Manchester Grammar School, etc.
(iv) Boarding schools in the cities (these are a very rare and undesirable type, though in themselves perhaps excellent)—*e.g.*, Westminster and Christ's Hospital, London.

The total number of Secondary Schools in England is very large, according to the latest Whitaker, being about 618.

7. *Internal Organisation of English Secondary Schools.*—The inner organisation of English Secondary Schools is very varied. Each school has its own development, or scheme of articulation. Generally speaking, children, after some preparation in the kindergarten or a private school, enter between 7 and 9 years of age (generally about 8) a *preparatory school*, which is more or less intimately connected with the secondary school itself. Day schools generally have what is called a "*Junior Department*"; it is really a preparatory school. Board schools, it may be said, are not viewed in the light of preparatory schools, and in this connection it should be mentioned that it is a matter of importance to remember that the latest stages of higher primary education are not necessarily, nor are they generally, an efficient preparation for the normal course of secondary education.

Children, as a rule, remain in the preparatory schools or junior departments until they are 14 years of age. The *senior departments* or upper schools have a course lasting from four to five years, so that matriculation from first-class schools takes place generally at about 19 years of age. Lads rarely matriculate at 18, and still more rarely at 20, and one may say practically never after 20.

Particularly gifted boys not unfrequently enter the upper school at 13 years of age; they rarely enter later than 15.

Occasionally, instead of having two departments (junior and senior), there are three divisions, viz., *lower*, *middle*, and *upper*, in which case the middle and upper are together the equivalent of the senior. As regards the internal régime, the main division of schools is into the *classical* and *modern* sides, the first being somewhat similar to the German Gymnasium and the latter to the Realgymnasium. Although there is no exact equivalent of the Oberrealschule, some of the schools pay considerable attention to commercial education, as, for example, Leeds; and also to special preparation in natural science and in technical subjects. Another class of pupils are those who are prepared for the military profession; they constitute a division by themselves known as the *Army class.* The most complete classification of divisions is the (1) Army class, (2) Commercial class, (3) Science class, and (4) Engineering department. The following are examples shewing the development of several important schools:—

Merchant Taylors' School, London.

Lower School.—Two Sections (Lower and Upper), in which the classes are as follows:—

(i) Lower I, Upper I, Lower II, Upper II, Lower III. (Lower Section.)
(ii) Upper III, Lower IV, Upper IV, Lower Division, Upper Division. (Upper Section.)

Upper School.—Three Sections (viz., Lower Modern and Upper Modern, on the Modern Side; and the third is the Classical Side). The several classes are as follow:—

(i) Lower Remove, Upper Remove, Lower V, Upper V. (Lower Modern).
(ii) Lower VI, Head Form. (Upper Modern.)
(iii) Lower V, Upper V, Lower VI, Upper VI, Head Form. (Classical Side.)

In *Clifton College*, the Preparatory school is for boys of from 8 to 11 years. When a boy is 11, however, he must, for pædagogical reasons, leave the Preparatory school and enter the Junior school; and similarly at 14 years of age, and for the same reasons he must enter the Higher School. He is deemed to be too old to be among the junior boys. The classes from 11–14 are:—

Clifton College.

Junior School—Iβ, Ia, IIβ, IIa, IIIγ, IIIβ, IIIa.

From 14–19 there are three sections: (a) the Classical, (b) Modern, and (c) Military. The following scheme will indicate the parallelism of the classes:—

(a) Classical—IIIγ, IIIβ, IIIa, — IVβ, IVa, Vγ, Vβ, Va	...	...	14–19 years.
(b) Modern— 3c, 3b, 3a, 4c, 4b, 4a, 5c, 5b, 5a	...	...	14–19 „
(c) Military— 4x, 5z, 5y, 5x	...	...	14–19 „

At *Rugby* the organisation is as hereunder:—

Lower School.—Boys are required to leave this at 14 years of age.
Classical School.—Lower Middle II, Upper Middle II, Lower Middle I, Upper Middle I.
Lower Fifth, Fifth, Twenty.[2]
Sixth Lower Bench, Sixth Upper Bench.[3]
Sixth and Upper School specialists in Mathematics or Science.

On the Modern side the classes are as follows:—

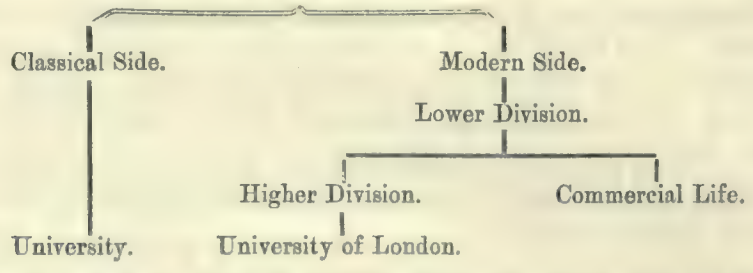
Modern School.—Lower Middle II, Upper Middle II, Lower Middle I, Upper Middle I.
Army Class, Lower Division U, VI, 1; V, 2; V, 1.
Army Class, Upper Division, V, XX, VI.
Lower Fifth Fifth, Twenty, Sixth.

This absence of identity in scheme in different schools runs through all the schools and colleges By way of further example, the classes of Charterhouse and Tonbridge Schools may be quoted.

Charterhouse School.		*Tonbridge School.*	
Lower Shell.	Upper IV.	I.	IV.
Middle Shell.	Remove.	II.	Lower V.
Upper Shell.	Under V.	Lower III.	Upper V.
Lower IV.	Upper V.	Upper III.	The Twenty.
Middle IV.	Under VI.	Remove.	The VIth.
	Upper VI.		

Another example will serve to shew how pupils branch off from the secondary school work. This may be drawn from the Merchant Taylors' School.

Merchant Taylors' College.



From what has been stated, it will be seen that there is no general unity of idea in regard to the organisation of English secondary education. It ought, however, to be mentioned, in this connection, that there are defenders of this feature of English educational method, or rather *want of method*. Those who approve the existing system imagine that it cannot be departed from without falling into the thrall of a stereotyped and mechanical scheme, the defects of which they believe to be even more serious than those of the existing system.

That there should be considerable range in the educational possibilities in any path is a matter of importance, to which reference will later be made. This freedom and liberality in applying the machinery of an educational system is quite compatible with a definite scheme of organisation.

The most conspicuous and signal advantage of a proper co-ordination of the various parts of the educational machinery is that each institution can collaborate with every other so as to avoid all unnecessary overlapping, and to avoid the tendency to substitute "cramming" for more thorough, more normal, and deliberate study.

8. *Subjects of Instruction in English Secondary Schools.*—The subjects of instruction in English Secondary Schools are partly determined by the attitude of the Universities in regard to compulsory classical languages and partly by a growing sense of the practical needs of the nation. The subjects of instruction on the Classical side are usually (1) Religion (or Divinity, as it is sometimes called), (2) English, (3) Latin, (4) Greek, (5) French, (6) History, (7) Geography, (8) Arithmetic, (9) Mathematics, (10) Natural Sciences (viz, Physics, Chemistry, etc.), (11) Drawing, (12) Singing, and such other subjects as (13) German, etc., (14) Instruction in Instrumental Music, and so on. These two last subjects, viz., German and Instrumental Music, and also similar subjects, are usually optional, and extra fees are required for them. On

[1] The Middle School boys have to be fags.
[2] The Lower Section of the Upper School could be punished only by the head of the school.
[3] These are allowed to have fags.

On the Modern side the subjects of instruction are generally (1) Mathematics, (2) English, (3) Latin, (4) French, (5) German, (6) History and Geography, (7) Natural Science (viz., Chemistry and Physics), (8) Drawing, and (9) Singing. The following brief sketch will give some idea of the proportion of the various subjects, *King's College School*, London, being taken for the purpose of illustration:—

King's College School, London.

JUNIOR SCHOOL.

Latin	7
French	3
Mathematics	6
Singing	2
Exercise	2
English subjects generally	10
	30

CLASSICAL DIVISION.

Classical languages	16
French	2
Mathematics	2
Other subjects	10
	30

COMMERCIAL DIVISION.

Modern languages	8
Mathematics...	7
History	3
Geography	2
Drawing	2
Commercial subjects	4
Others	4
	30

MATHEMATICAL DIVISION.

Mathematics...	10
Natural Science	4
Modern languages	8
Extra—Natural Science or Drawing	4
Others	4
	30

The numbers denote the periods, each forty-five minutes, so that the number of hours per week is three-fourths of what is above shewn. Home-work is not of course included in the time indicated.

At *Harrow* the hours per week are as follows:—

Classes.	Hours per week	Religion Classics.	Mathematics.	Natural Science.	French.
Fourth Form	$21\frac{3}{4}$	$14\frac{1}{4}$	$3\frac{1}{3}$	$1\frac{1}{2}$[1]	$2\frac{1}{2}$
Remove and Shell	$21\frac{3}{4}$	$14\frac{1}{2}$	$3\frac{1}{3}$	$1\frac{1}{2}$[2]	$2\frac{1}{4}$
Fifth Form	$21\frac{1}{2}$	$17\frac{1}{2}$	$3\frac{1}{4}$	2	$1\frac{3}{4}$

The attitude toward Science of the English public school has not *materially* changed in some of the schools of highest reputation. Speaking generally, the teaching in English schools in Science is not in any way comparable to that of the German Realgymnasium.

The following syllabus of Science work is an excerpt from the "Eton Calendar for Michaelmas School-Time, 1902," and may be taken as representing the Eton view of a sufficient teaching in Natural Science:—

(C) CHEMISTRY.

"The course for the Autumn and Spring Halves consists of lessons on the properties (Physical as well as Chemical), partial and ultimate analysis, synthesis, and probable history of some common compounds, with the chief properties of their elementary constituents. The operations of measuring gases both by volume and weight, with the effect of temperature, pressure, and moisture upon their volume. The substances selected are used to illustrate some of the fundamental laws of Chemical combination and also Chemical methods. *Quantitative experimental proof is given throughout where possible.*"

"In the Summer Half these principles are further applied to the study of air and water, qualitative and quantitative; to combustion, and its relation to the life and health of animals and vegetables."

(D)

Michaelmas.	*Lent.*	*Summer.*
Mechanics.	Heat (i)	Heat (ii)
Laws and definitions.	Sources of Heat.	Distribution of Heat.
Mass and weight.	Thermometer.	Conduction.
Gravitation.	Expansion.	Convection.
Levers.	Change of State.	Radiation.
Properties of Liquids.		Specific Heat.
Pascal's Law.		Potential Heat.
Archimedes' Principle.		Joule's Equivalent.
Specific Gravity.		Steam Engine.
Properties of Gases.		
Boyle's Law.		
Barometer.		
Pumps.		

(E)

"The work of this Block consists of (a) Lectures, (b) Practical Work."

"(*a*) The lectures during the Michaelmas and Lent School-times consist of lessons based on Elementary Physiography, or more properly what the Germans call *Erdkunde*. They are intended to give an explanation of scientific methods rather than a knowledge of facts; dealing first with the Earth as a planet in relation to the other heavenly bodies, and afterwards with the main features of its structure, as can be gathered by ordinary observation and the use of simple apparatus. In the Summer School-time some kind of nature study, *e.g.*, Botany, is dealt with, as far as possible, in a practical way.

"(*b*) The practical work consists of lessons in Elementary Physics, embracing Mensuration, Mass and Volume, Levers, Combustion, Magnetism, the Voltaic Cell, etc. The course extends throughout the year, beginning at Michaelmas, and *is based on the heuristic method where possible.*" This course is distinctly of an elementary character. 9.

[1] Drawing or singing may be substituted for this. [2] In the 2nd and 3rd of the Shell Divisions, Gymnastics is taken.

9. *Report of the Royal Commission on Secondary Education.*—On the 2nd March, 1894, a Commission of ladies and gentlemen, numbering in all sixteen, was appointed by her late Majesty Queen Victoria, to "consider what are the best methods of establishing a well-organised system of secondary education in England, taking into account existing deficiencies, and having regard to such local sources of revenue from endowment or otherwise as are available or may be made available for this purpose, and to make recommendations accordingly." That Commission sent in its report on the 30th August, 1895. Unfortunately the work of that Commission cannot be taken as a sufficient guide for the purposes of this State, forasmuch as the conditions obtaining in England are not only different from what they are here, but those conditions also practically tied the Commission's hands in regard to establishing any thoroughly organised and efficient secondary system of a national character.

The Commissioners say, "We did not begin our work on virgin soil, and had no need to labour at an *a priori* system. *Such a system would*, under the actual conditions, *have been in the very degree that it was theoretically perfect, really impracticable.*" (Page 85.)

Such a statement, while it reveals the spirit of caution, and discloses how important it is to recognise the wisdom of the proverb, "Even the 'Better' may be the enemy of the 'Good,'" betrays, almost pathetically, how seriously English education is hampered by the fetters forged by the past. Interests arise, and conditions are created, which formidably oppose themselves to all progress, and reformation becomes difficult in proportion as it is necessary.

10. *Dangers in regard to Secondary Education.*—Recollecting how severely the English educational system has been criticised by those who have impartially reviewed it in the light of a knowledge of education in other parts of the world, the English Commissioners' Report at least teaches us that "a sporadically-created and unorganised Secondary Educational System" is not readily converted "into an efficient and satisfactory system." Indeed it is hardly possible in any brief period of time to bring about "the harmonious development of a well-balanced system of secondary education, nationalised without centralisation," and "organised without uniformity." That England has no such system is the penalty she has to pay for allowing her secondary education to constitute itself, without that unification under which alone it could hope in any way to express a national ideal of education.

Here, be it remarked, that in this State we shall profit by the educational errors of the past, only in so far as we avoid the educational pitfall into which the mother-country has fallen. The drift of secondary education is, after all, much the same in this State as it was in England, and, if we are not on our guard, we shall find that the penalty must be paid. The

The truth is that *the State*, as such, *has a unique interest in all education*, and this is unequivocally implied in the English report referred to (see Part I, Division 4, section 3). The passages hereunder are quoted in full on account of their importance; but they are not italicised in the original. They reveal the consciousness of past neglect in regard to the British system of education. The report says:

> "But there is one feature in this growing concern of the State with education which must not be here overlooked. *The growth has not been* either continuous or *coherent; i.e., it does not represent a series of logical or even connected sequences. Each* one of the agencies whose origin has been described was called into being, not merely independently of the others, but with little or no regard to their existence. *Each has remained in its working isolated and unconnected with the rest.* The problems which secondary education presents have been approached from different views and aims. The Charity Commissioners have had little to do with the Education Department, and still less with the Science and Art Department. Even the borough councils have to a large extent acted independently of the school boards, and have, in some instances, made their technical instruction grants with too little regard to the parallel grants which were being made by the Science and Art Department. Endowments which, because applied to elementary education, were exempted from the operation of the Endowed Schools Acts, have been left still exempt, though the public provision of elementary education in 1870, and the grant of universal free elementary education in 1891, have wholly altered their position. *The University colleges, though their growth is one of the most striking and hopeful features of the last thirty years, remain without any regular organic relation either to elementary or to secondary education*, either to school boards or to county councils. *This isolation and this independence*, if they may seem to witness to the rich variety of our educational life, and to the active spirit which pervades it, will nevertheless prepare the observer to *expect the usual results of dispersed and unconnected forces, needless competition between the different agencies*, and a frequent overlapping of effort, with much consequent waste of money, of time, and of labour."

It has been pointed out by the English Commissioners that the systematic organisation of secondary education does not necessarily mean absolute uniformity nor control by a central department of government. "Freedom, variety, and elasticity," say the Commissioners, "are and have been the merits which go far to redeem the defects in the English education, and they must at all hazards be preserved." The system which they thought desirable was such an one as might reasonably be hoped to bring about an organic relation between different authorities and different classes of schools, such as would "enable each to work with due regard to the work to be done by the others, and so as to avoid waste both of effort and money." They point out that "*it is impossible to speak too strongly*" on the loss incurred through the want of correlation, and that the evil tends to augment, for the existing authorities whose want of co-operation is so much to be regretted, are "*getting more accustomed to the exercise of their present powers and are less disposed to surrender them.*"

The same condition of things is, of course, arising in this State, and the remarks of the English Commissioners on vested interests are consequently particularly worthy of our serious attention. They write as follows:—

> "Vested interests are being created which will stand in the way of the needed reforms. Instances occur in which large sums of money are being expended in buildings, or otherwise upon institutions which, if not superfluous, are planned upon imperfect lines, and with reference to one area or one purpose only, where others should have been equally regarded, while, at the same time, many plans of admitted excellence cannot be carried out, owing to the precarious position in which the money available under the Customs and Excise Act of 1890 now stands. Thus the difficulty of introducing

introducing the needful coherence and correlation becomes constantly greater, and will be more serious a year or two hence than it is at this moment. We feel bound, therefore, to state the opinion which has grown stronger in us since we entered upon this inquiry, that the latter is one of urgency, and ought to engage the very early attention of your Majesty's advisers and of Parliament:" (pp. 326–327.)

That the English Commissioners were fully seized of the magnitude of the question they were called upon to consider is abundantly evident throughout their report. They expressed themselves with great force upon the influence of education on the future of our country in the following words, which are well worthy of our attention :—

"Elementary education is among the first needs of a people, and especially of a free people, as appears by the fact that all, or nearly all, modern constitutional States have undertaken to provide it. But *it is by those who have received a further and superior kind of instruction that the intellectual progress of a nation is maintained. It is they who provide its literature, who advance its science, who direct its government*:" (p. 327.)

The English Commissioners have also pointed out that the function of higher education is to intensify the national appreciation of knowledge, to create in its citizens habits of application and reflection, to implant in them tastes, the delight and solace of which will extend beyond the duties of every-day life. They have also recognised that there is only too much truth in the indictment of Great Britain's educational system. Their words are :—

"Not a few censors have dilated upon the disadvantages from which young Englishmen suffer in industry and commerce owing to the superior preparation of their competitors in several countries of continental Europe. *These disadvantages are real.* But we attach no less importance to the faults of dullness and barrenness to which so many lives are condemned by the absence of *those capacities for intellectual enjoyment which ought to be awakened in youth.* . . . . . Thus, it is not merely in the interests of material prosperity and intellectual activity of the nation, but no less in that of its happiness and its moral strength, that the extension and reorganisation of secondary education seems entitled to a place among the first subjects with which social legislation ought to deal:" (p. 328.)

11. *Comparison between the Secondary System of England and that of Scotland, Wales, and Ireland.*—The English public school system is in no sense a democratic one, nor does it profess any tendency in that direction. At the same time, it must be recognised that increasing provision is being made for classes to receive good secondary instruction, where but a few years back that was impossible. Speaking generally, secondary education of the higher character was practically restricted to people of some social rank and wealth.

Plato drew a distinction between those who learn the arts of the grammarian or of the musician, etc., for trade (ἐπὶ τέχνῃ), and those who as freemen learn them for education and culture (ἐπὶ παιδείᾳ).[1]

The English Commission has pointed out that there are many "who would limit the term education to the discipline of faculty and the culture of character by means of the more humane and generous studies, and who would deny the name to instruction in those practical arts and sciences by means of which man becomes a craftsman."

This, they point out, is a limitation without reality at least as things now stand, and they affirm "that training in classics may have as little liberal culture in it as instruction in a practical art," and further that "modern literature may be made a field for as narrow and technical a drill as the most formal science." Seeing that the trend of modern idea is that in some way *all* should seriously contribute to the social economy, education more and more implies the preparation to accomplish something in life enjoyed rather than merely to enjoy life ; and the Commissioners' definition of the general idea of education has importance as a *truly liberal* conception which commands attention. Their view is that "all education is development and discipline of faculty by the communication of knowledge," and they argue that "whether the faculty be the eye or hand, or the reason or imagination, or whether the knowledge be of nature or art, of science or literature, *if the knowledge be so communicated as to evoke, exercise, and discipline faculty, the process is rightly called education.*"

There is an increasing recognition of the fact that secondary education of this higher character should be available not merely to the wealthy few, but to all those whose inner prompting and ability make it possible for them to profit by it. The better education, and its more advanced stages ought not, in a normal state of society, to be the privilege solely of those who enjoy rank and affluence, but ought to be *available* to the people.

In comparing Scotch educational machinery with English, it is obvious that on the whole there has been greater opportunity in Scotland for those of inferior social rank and limited means to enjoy the benefits of higher education ; in other words, the Scottish system is more democratic. It may be said also that the ambition to be well-instructed and well-informed is, on the whole, more marked in the Scotch of limited means than in the corresponding class in England. The education of the country reflects this. The same remark applies also to Wales, where the popular appreciation of higher education is strongly marked.

In individual schools the democratic spirit shews itself in the attitude to the question of class. The notable English Public Schools have always laid great stress on "good form" and "tone" rather than upon even *general culture*.[2] The function of the school was to develope manly traditions, high qualities of character, and *esprit*. The fact, however, that only the very wealthy could afford to send their boys to the great English Public Schools, has tended to somewhat restrict the sympathies of "public school" men to their own class, and their attitude to the masses would not be appreciated in democratic countries. It is said "has *tended*" because, as might have been anticipated, there are brilliant exceptions.

If an educational system declines to take account of class distinctions, then strength of purpose, and thoroughness and generality of intellectual training must replace education designed merely to maintain the traditions of one class of society.

On

[1] Protagoras. [2] As distinguished from purely *classical instruction* which cannot be regarded as general culture.

On the other hand, it is well to remember that a fusion of the two is not impossible, and from the standpoint of national purpose it is desirable that general culture should meet with appreciation rather than that merely classical or merely scientific education should be uniquely esteemed. The *esprit* developed in English Public Schools is undoubtedly an excellent thing up to the point where it degenerates into a tendency to underestimate those who have gone through other schools, or who have been educated on other plans. The English Commissioners on Secondary Education have recognised this. They believe that it is undesirable to reinforce the small Classical Grammar School, for the reason that under modern conditions that would tend to inefficiency rather than to success, and they go on to say that "our aim ought to be to restore as far as possible the reality which these old schools symbolised, viz., the accessibility to all the competent of that education, be it classical or modern," which best fits us to discharge our responsibilities in the whole sphere of duty or privilege which falls to our lot (page 140).

Further, it ought to be noted that while modern educational institutions ought to aim, and are aiming, at placing the privileges of all forms of education, at the disposal of all who can profit thereby, and while *true democracy* does not propose to level down, but rather to give to every man an opportunity to rise to the level which his intellect and personal character and address will allow, it *is* true that, on the whole, the classes whom fortune has most favoured will, in virtue of that very fact, have the advantage in attaining to the highest expression of those relations of courtesy and consideration which in the degree they exist, distinguish the cultured man from the boor, or indeed the civilised man from the savage.

It would be difficult to adequately estimate the value of the British Public School in respect of its endeavour to discharge this, one of the highest educative functions. Those who vividly realise the part that *address* plays in the relations of mankind, and who recognise the fundamental principle that the moral is the supreme aim of education, will not forget that tone and good form are matters of the highest importance, and that from the Kindergarten upward it is desirable that such matters should be attended to systematically.

The fundamental view of education obtaining in the best cultured circles in Ireland appears to be that no one can be considered *liberally* educated whose education is not general. A similar view obtains, perhaps, in no less a degree in Wales.

Taking a wide survey of all the characteristics of secondary education in the United Kingdom, and recognising that, while we are of the same race, are possessed of much the same spirit, and are akin in sympathy, we yet have developed different traditions, and are essentially a democratic people, it will be well if we endeavour to include the fusion of the best elements of each member of that kingdom among the educational influences of our higher school life.

12. *Conclusion in regard to English Secondary Education.*—As just indicated, we need to embody in our educational ideal the ideas of width of culture, thirst for learning, and appreciation of all the higher forms of human courtesy. The educational ideals of any one part of the United Kingdom, as expressed in their existing institutions, cannot be made the aim-point of our educational effort. If for existing institutions we substitute the ideals of the reform educationists of England, Ireland, Scotland, or Wales, we shall endeavour to make our educational institutions such as will secure that thoroughness characteristic of certain parts of Europe, and that grace of manner often conspicuous therein, while we endeavour to retain the sterling qualities which we nationally deem to be all important.

It will, however, be unfortunate for the future of our State if the drift along the lines of English Secondary Education be allowed to continue. The necessary variety of educational experience can be secured without sacrificing the unity of system which is involved in the example of the United Kingdom, nor will it be necessary in any way to cripple all attempts at individuality in the several types and grades of Secondary Schools. What is needed is that uniformity of régime, and of general method and aim, which will secure the advantages that may be derived from the progress of educational theory and practice. This theme has been discussed in the earlier reports of the Commissioners, at least so far as principles are concerned, in chapter LIV, on the "Co-ordination of Education" (pp. 469–474), and chapter LV, on the "State's Relation to Education, Unification, Subsidy, etc." (pp. 475–480). The principle there set forth may be stated as follows:—

In order that an educational system shall fulfil its function—viz., the upbuilding of the people—it is necessary that there should be a well-defined scheme of co-ordination between all its elements, so that the whole educational system, though representing many phases of human education, shall have that homogeneity that can exist only under a scheme of defined inter-relations.

England has learnt, and to some extent is still learning, that the *laisser faire* policy in regard to the growth of educational institutions will not yield satisfactory results, and cannot be allowed in the interests of the people to continue. That is what is realised by the Reform educationists of the United Kingdom, who have recognised that a comparison with the systems of other countries ends in an adverse judgment as regards our own.

The important lesson to be learnt is, that however splendid some of the elements of English education may be, the reproduction in this State of its general features would not only be disadvantageous, but would disclose an inability to recognise that the traditions and temper of the Australian people are inconsistent therewith.

It may be added that the recent registration of teachers and the development of some form of training for secondary teachers in England, will perhaps do something to bring about proper organisation.

CHAPTER VII.

CHAPTER VII.

Secondary Education in Scotland.

[J. W. TURNER.]

Royal High School, Edinburgh.

The cities of Edinburgh and Glasgow have each a high school, and in addition, several secondary schools supported by private endowment.

The Royal High School, Edinburgh, is architecturally, one of the finest buildings in that city. The following particulars of the school buildings are gathered from the most recent prospectus. The style is the purest Doric, the central portion being modelled on the celebrated Temple of Theseus, at Athens, and the whole is distinguished for grace and nobility of mass, and justness of proportions. The school is under the control and supervision of the School Board of Edinburgh, and the extensive range of well-appointed buildings provides not only for the classical scheme of education, which is the ancient tradition of the school, but also, in various alternatives, for a modern training in languages, science, and commerce.

The School.—The school contains a splendid library, a writing hall with a commercial department attached, a physical laboratory, with appliances for instruction in electricity, light and heat; three large and eight small classrooms; and in the centre of the whole, a great hall decorated with the portraits and busts of famous masters and pupils. In this hall the whole school assembles for the daily morning prayers and for public meetings connected with the school.

In one of the detached wings workshops for wood and metal work are situated, and in the other wing is the school refreshment department. In another part of the building are situated the gymnasium, one of the largest and best equipped in the Kingdom, and *en suite* with it a swimming bath of almost equal size, with dressing rooms and other conveniences. Here also are the chemistry lecture hall, and, adjacent to it, a laboratory, fully equipped with the most modern appliances for practical instruction in chemistry; a large drawing classroom, suitably lighted and equipped for the teaching of drawing, designing, and modelling; and, finally, seven ordinary classrooms of different sizes to suit the smaller senior and larger junior classes.

The rooms recently added to the building are well ventilated and heated, and in every way rendered wholesome for the pupils and efficient for teaching purposes. They have all a south exposure, and are lofty, bright, and cheerful.

The Staff.—The staff of the school consists of the rector and four classical masters, a senior and three junior mathematical masters, one of whom is also lecturer in physics and superintendent of the Technical Department in the school, a senior and three other English masters, two masters of modern languages and an assistant master, a senior and an assistant commercial master, a drawing master, lecturers in chemistry and physiology, instructors in singing, gymnastics, swimming, and manual work, and a senior and two junior mistresses of the Preparatory Department.

School Curriculum.—Boys are admitted as preparatory pupils from the beginning of their school course, and after three or four years are transferred to the junior school, where they begin the systematic study of French and Latin, with English, arithmetic, and other elementary subjects.

In the senior school intended for boys above the age of 12, *four* distinct schemes of education are provided to meet different capacities and requirements. For those desirous of proceeding to a learned profession, the *classical* curriculum provides a full course in Latin, Greek, mathematics, English, and French; the *modern* curriculum offers as an alternative for Greek, a course of German, the other subjects remaining unchanged; the *commercial* curriculum includes English, French, German, commercial arithmetic, book-keeping, précis writing, shorthand, and commercial correspondence; the *scientific* curriculum provides as an alternative for the strictly commercial subjects a course of training in the laboratories (physical and chemical), in the workshops, and in the drawing classroom on the lines prescribed by the Scotch Education Department for Schools of Science.

The School prepares for the University entrance examinations, the examinations conducted by the Scotch Education Department for the different grades of leaving certificates, the examinations held in Chemistry and Physics by the Science and Art Department, the Law entrance examinations, &c. The whole school is also annually examined and reported on by examiners appointed by the Board or the Education Department.

The physical training of every boy is carefully attended to. The gymnasium and swimming bath are fitted up with every modern appliance, and each boy receives regular instruction under the personal superintendence of the two instructors, whose whole time is employed in connection with this department.

Fees.

Fees.

Pupils under 10 years of age (at date of first enrolment)			...	...	£5 per Session.
„ over 10 and under 12	„	„	...	...	£6 „
„ over 12 and under 14	„	„	...	...	£7 „
„ over 14 years of age	„	„	...	...	£8 „

The fee which a pupil pays, according to the above scale, on entering the school, continues to be the fee chargeable on his account during the whole period of his attendance at the High School. In the case of those matriculating the fee is included in the ordinary session payment.

ENDOWED SCHOOLS—GEORGE WATSON.

Edinburgh Merchant Company Schools.—The George Watson's College for boys, a privately endowed secondary school, is intended to provide boys with a liberal education, qualifying for professional and commercial life, the Civil Service, and the Universities. The school is divided into three departments—Elementary, Junior, and Senior. About the age of thirteen, pupils enter the senior department, and, according to the wish of their parents, may join either the classical or the commercial side of the school. The classical side prepares for the Universities and the learned professions, the commercial side for business life.

Classical Side—Course of study—

English—The higher English authors, Anglo-Saxon, history of the language and literature, English composition, geography, history.

Latin—Cæsar, Livy, Sallust, Nepos, Cicero, Tacitus, Ovid, Virgil, Plautus, Terence, Horace, Latin Prose composition, history. geography, antiquities.

Greek—Xenophon, Lucian, Demosthenes, Thucydides, Isocrates, Plato, Homer, Sophocles, Euripides, Aristophanes, New Testament Greek, Greek Prose composition, history, geography, antiquities.

French—Translation from classical French authors, French Prose composition, history of French language and literature, conversation.

Mathematics—Arithmetic, algebra, Euclid, trigonometry, analytical geometry, conic sections, dynamics.

Science—Physics and Chemistry.

Drawing, Gymnastics, and Physical Drill.

On the classical side boys have the option of taking German instead of Greek.

Commercial side—Course of Study—

English and Mathematics, as on the classical side; French and German; Science; Drawing—freehand mechanical, and architectural; Shorthand and book-keeping; gymnastics and physical drill.

The prospectus for 1903 session states that:—Elementary science forms part of the regular curriculum of study on each side of the Senior Department. The chemical and physical laboratories are fully equipped for practical work. The science classes are organised on lines approved by the Education Department, and they are under its inspection. These classes have in view the requirements of the science leaving certificate, intended for pupils who have passed through a three years' course in physics and chemistry. The work of this course is almost entirely practical, and gives large opportunities for the individual training of the pupil in the proper manipulation of instruments, as well as in the accurate observation and careful recording of results.

Fees of Senior Department—Lower Division, £1 15s. per Quarter.
Higher Division, £2 2s. per Quarter.

GIRLS' HIGH SCHOOL, EDINBURGH.

The Edinburgh Merchant Company Schools.—The Edinburgh Ladies' College.—The main object of the Edinburgh Ladies' College, as set forth in the latest prospectus, is to prepare the pupils for discharging with intelligence, with sympathy, and with good taste, the duties of home life. With that end in view the course provides them with a good knowledge of English subjects, an acquaintance with modern languages, a practical knowledge of arithmetic, and skill in needlework, while their artistic faculty is developed by the study of music, singing, and drawing. The same course of training, with additional attention to the commercial side of arithmetic, to book-keeping, and to shorthand, supplies a suitable training for pupils who wish to follow business pursuits. The course of study in the highest classes prepares the way for pupils who desire to become teachers or to attend the University.

Great attention is paid to the physical training of the pupils, every class in the college receiving instruction in Swedish drill and gymnastics from thoroughly qualified instructors.

The school is divided into three departments—Elemenary, Junior, and Senior. Pupils are admitted to the Elementary Department at the age of five and pass into the Junior Department about the age of eight or nine years. Pianoforte music is introduced at this stage and continued during the pupils' career. The Senior Department is reached about the age of twelve. This department consists of five grades, each of which is subdivided into three classes. Attainment in English is the basis of the classification, but the pupils of each grade are re-classified for mathematics, French, German, and Latin.

Pupils in the upper division are prepared for the leaving certificate examinations of the Scotch Education Department. These certificates are now accepted as an equivalent for most of the professional entrance examinations. At the close of their school course pupils are qualified to join the University classes.

Pupils in the more advanced music classes are sent up for the local School Examinations in pianoforte, conducted by the Associated Board of the Royal Academy of Music and the Royal College of Music.

There is a well-equipped laboratory for the teaching of science, and practical lessons in physics and botany are given throughout the session by a throughly qualified science master. The science course is organised on the lines laid down by the Scotch Education Department, and is under its inspection.

Course

Course of Study.—The course of study includes:—

English—English classical authors, Anglo-Saxon, history of English language and literature.

French—Translation from classical French authors, French prose composition, history of French language and literature, conversation.

German—Translation from classical German authors, German prose composition, history of German language and literature, conversation.

Latin—Cæsar, Ovid, Livy, Virgil, and Horace, Latin prize composition.

Mathematics—Arithmetic, algebra, Euclid, modern geometry, trigonometry, analytical geometry, history and geography, science, writing and book-keeping, shorthand, pianoforte music, singing, drawing and painting, dancing, Swedish drill and gymnastics, needlework, and practical cookery.

Fees, Senior Department.

Lower Division, lower grade	£2 10s. per quarter.
Lower Division, upper grade	£2 15s. „
Higher Division	£3 „

The bursaries, foundations, and prizes in both Edinburgh Merchant Company Schools are on a liberal scale.

George Heriot's School, Edinburgh.

This is another of the privately endowed secondary schools with which the city of Edinburgh is so liberally supplied. While provision is made for the teaching of all the subjects required for entrance to the University, the George Heriot School is essentially modern in its organisation and course of work, and gives, in particular, advanced instruction in modern languages, science, commercial subjects, and drawing. To secure thoroughly practical teaching of the science subjects, which form a distinctive feature of the educational course followed in the school, the science side has been equipped with great completeness. There are separate laboratories and lecture-rooms for physics, chemistry, geology, and botany.

While the practice of specific trades is not included in the technical course, boys receive preparation for trade life. There are excellent workshops, both for iron and wood, with all the requisite appliances and machinery, and the instruction in technical subjects is made eminently educative in its character, a systematic training being given in the acquirement of habits of careful observation and accurate comparison and measurement. The mechanical and architectural drawing and workshop instruction are under the supervision of the same teacher, an arrangement which gives the best results.

Careful attention is given to physical training, and the school gymnasium is fitted up with all the best and most modern appliances. The playground is extensive and the playsheds are spacious. A well-appointed swimming bath has been constructed and swimming forms part of the school training.

Boys are admitted on an entrance examination covering the third standard. The enrolment is about 1,000, in three departments.

Fees.—The fees for the general course are much below those charged in the other secondary schools of Edinburgh, but pupils taking special courses in manual training, or in applied science, or technical drawing, are called upon to pay an additional quarterly fee varying according to the nature of the subject. The ordinary fee in the Advanced Division is only £1 5s. per quarter.

The school is liberally endowed with scholarships and foundations.

GENERAL SYLLABUS OF CLASS SUBJECTS, SESSION 1902-1903.

Lower Department (Fee 7s. 6d. per Quarter.)

English—History—Geography—Scripture—Writing—Arithmetic—French—Latin—Drawing—Singing.

Middle Department (Fee 10s. per Quarter.)

English—History—Geography—Scripture—Writing—Arithmetic and Mathematics—French—German—Latin—Elementary Physics—Laboratory Course in Elementary Measurements—Introduction to Natural Science and Chemistry—Drawing—Handicraft—Singing.

Upper Department—First Division (Fee 15s. per Quarter.)

(Classes I and II.)

English—History—Geography—Scripture—Ornamental Writing and Lettering—Arithmetic and Mathematics—French—German—Latin (or alternatively with Latin, Natural Science)—Physics—Chemistry—Drawing—Handicraft—Phonography—Book-keeping.

Second Division (Fee £1 per Quarter.)

(Classes III and IV.)

In this Division a bifurcation is made into Science and Commercial Courses. The Science Course comprises English, Latin, French, Mathematics, Physics, Chemistry, Drawing and Handicraft, while in the Commercial Course are included English, French, German, Mathematics, Natural Science, Economics, Book-keeping, Phonography, Drawing and Handicraft.

Advanced Division (Fee £1 5s. per Quarter.)

(Classes V and VI.)

The work of these Classes is similar to that of Second Division, but more advanced—the bifurcation into Science and Commercial Courses being continued.

Gymnastics and Swimming are taught in all the Classes of the School,

Science Course.

In all the Science subjects the teaching is practical. While Laboratory Practice is given in the various stages of Physics and Chemistry, the teaching in Physical Geography, Geology, and Botany is supplemented by maps, specimens, and field practice.

Middle Department.

Physics.—Experiments on the properties of Solids, Liquids, and Gases—Applications of Science to everyday work—Laboratory Course in Elementary Measurements.

Natural Science.—Natural History and Physical Geography.

I. Natural History.—Elementary Lessons on Rocks and on Plant Life.

II. Physical Geography.—The Earth as a Planet—The Moon—Measurement of Time—The Solar System—Other Stellar Systems.

Chemistry.—Elementary Lessons in Chemistry—Laboratory Practice.

Upper Department.

FIRST DIVISION.

Physics.—Dynamics—Motion—Matter—Energy—Work—Fluid Pressure—Specific Gravity—Laboratory Practice.

Chemistry.—Elementary Lessons in Chemistry—General sketch of the principal Non-Metals, and a few of the common Metals and Organic Substances—Laboratory Practice.

Natural Science.—Botany and Geology.

I. Botany.—Examination and Description of Common Flowering Plants.

II. Geology.—Examination and Description of Common Rocks and their Constituent Minerals—Common Geological Processes.

SECOND DIVISION.

Physics.—Heat—Electricity—Laboratory Practice.

Chemistry.—Illustrations of Chemical Action—Indestructibility of Matter—Classification of Elements—Difference between Compound and Mixture—Preparation and properties of Oxygen, Hydrogen, Nitrogen and Carbon, and their more commonly occurring compounds—Acids, Bases, and Salts—Laboratory Practice.

Natural Science.—Botany and Geology.

I. Botany (Summer Course).—The Structure and Growth of Flowering Plants, chiefly as seen by the naked eye—Fertilisation of Flowers—Study of Common Plants.

II. Geology (Structural).—Common Rocks and their Minerals—Elements of Earth's Crust—Structure and Arrangement of Rock Masses—Geological processes, as seen at work now—the Atmosphere and Water as Agents of Change—Denudation—Formation of Sedimentary Rocks—Earthquakes and Volcanoes—Formation of Igneous Rocks—Metamorphism.

ADVANCED DIVISION.

Physics, Class V.—Magnetism and Electricity—Dynamics—Laboratory Practice.

Do. Class VI.—Advanced Magnetism and Electricity—Advanced Dynamics—Laboratory Practice.

Chemistry.—Preparation and Properties of the Principal Non-Metallic Elements and their chief Compounds—Laws of Chemical Combination and Action—Symbolic Notation—the Chief Metals, their Oxides, Sulphides, and more important Salts—Elementary Organic Chemistry—Qualitative and Quantitative Analysis—Laboratory Practice.

Natural Science, Junior Section.—Botany and Geology, as in Second Division.

Do. Do. Senior Section.—Botany and Geology.

I. Botany (Summer Course).—Minute Structure and Growth of Flowering Plants and some Cryptogams—Simple Physiological Experiments, and Examination of Microscopical Sections—Classification of Plants.

II. Geology (Historical).—Nature and Use of Fossils—Succession of Strata—the Physical Geography, Botany, and Zoology of the Past. Advance shown in the Succession of Life on the Earth.

Technical Course.

The work of this Course includes Technical Drawing and Manual Training in the Workshops. In the forme subject, teaching is given in the construction of the elementary parts of machines and in building details. These are sketched as well as drawn to scale, and the pupil proceeds gradually to the making of finished drawings from models or actual pieces of machinery. Attention is also given to the lettering and colouring of drawings.

The Workshop practice is confined mainly to the construction of models and pieces of apparatus for the illustration of lessons in Applied Mechanics and in Machine and Building Construction; and it comprises general Wood-work (including Carpentry, Pattern and Model-making, and Wood-turning), Iron-fitting (Chipping, Filing, and Finishing), Iron-turning, Screw-cutting, Drilling, Shaping, Planing, and Iron-forging.

Arrangements are made for occasional visits being paid by pupils to engineering and other works in the city and neighbourhood.

The High School, Glasgow.

The management of the High School, Glasgow, is in the hands of the Glasgow School Board. The school is divided into a junior and a senior school, with separate entrances and playgrounds.

Fees.—The fees in the junior school are £1 15s. per term; in the senior school they range from £2 5s. per term in Form I to £2 15s. per term in Form VI. The year is divided into three terms.

The Curricula.—The chief features of the reorganised curricula are—

(i) The Junior School is now divided into a Preparatory Department, consisting of three classes taught by Mistresses, commencing with the Fröbel System, and a Junior Department of three classes taught by Masters.

(ii) Great stress is laid on a thorough grounding in primary subjects before entrance to the Upper School is allowed.

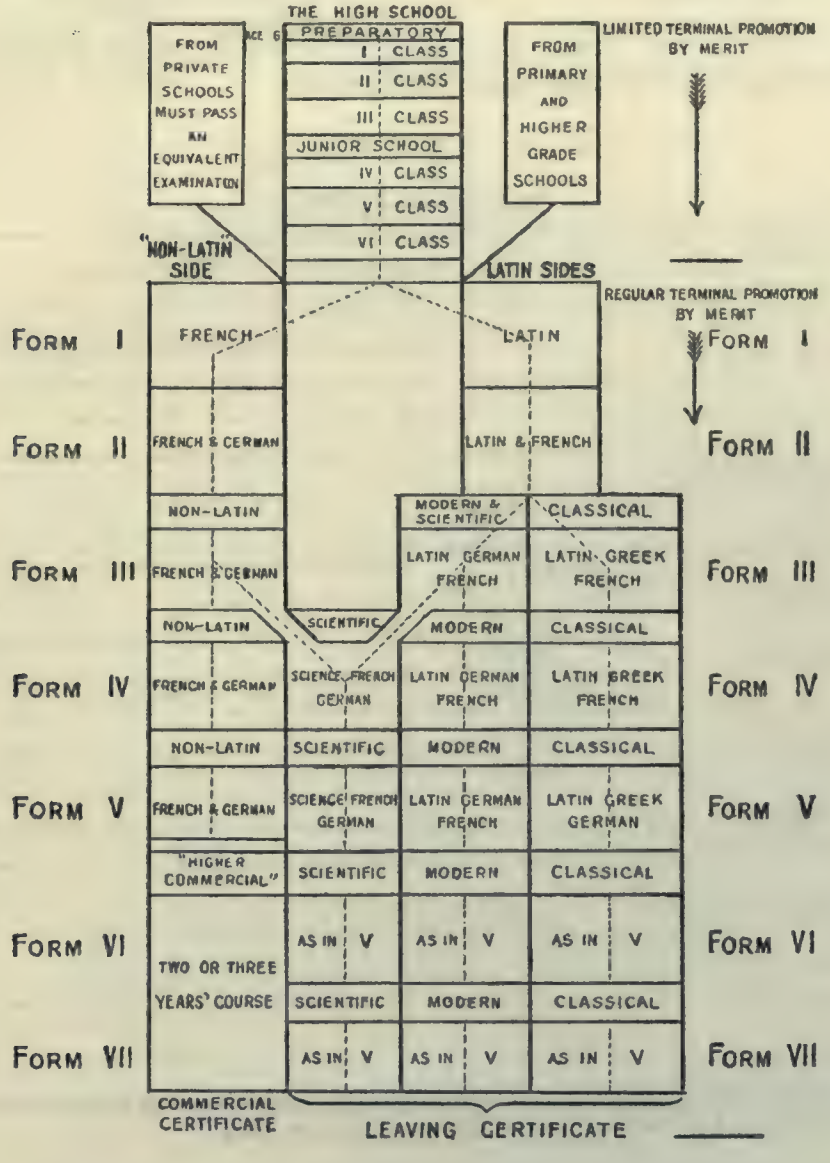
(iii) A *limited* terminal promotion is arranged for in the Preparatory Departments; in the Upper School there is regular terminal promotion by merit. Thus a clever boy can possibly secure three promotions in the year.

(iv) A Fourth Curriculum, the "Modern," has been added. A "Higher Commercial" Department has also been added, on the lines of that established by the London County Council at University College School, Gower-street.

The following diagram shows the intermediate and final possibilities:—

DIAGRAM

N.B. ONLY CHARACTERISTIC SUBJECTS ARE SHOWN



Advice to Parents with regard to the choice of a Curriculum.

I. The "Non-Latin" side is solely intended to meet the case of those boys who enter the School knowing no Latin, and whose whole stay in the Upper School is not anticipated to exceed two years.

II. Each of the three sides, Classical, Modern, and Scientific, affords a liberal education, and is an excellent preparation, not only for professional, but also for mercantile and business careers. It cannot be too strongly insisted on that the requisites for success are the same alike in professional and mercantile pursuits. These requisites are—accuracy of thought and of expression, the seeing eye, and the quick brain.

III. While the distinctively "Scientific" side (Form IV—*see Diagram*) is recruited from boys in the "Non-Latin" as well as in the "Latin" sides, parents who ultimately intend that their sons shall take the "Scientific" side are strongly recommended to place them on the "Latin" side from the first.

IV. The "Classical" side is recommended for boys who are likely to enter the Clerical, Legal, or Scholastic Professions, or to take an Arts Course at any University.

V. All boys who are entering business or mercantile life, no matter what side they have taken, are recommended before leaving to take the "Higher Commercial" Course. The ideal course of preparation for a business career would be one of the three definite Curricula to the Standard of the Sixth Form, followed by this "Higher Commercial" Course.

VI. Practically, all Preliminary and Entrance Examinations are now covered by the "Leaving Certificate" of the Scottish Education Department. This certificate, in its amended form, represents a fair standard of intelligence, attained by study of some "group" of subjects. Premature specialisation, or application to any professional or mercantile work which dispenses with such a standard of intelligence, must inevitably operate as a handicap throughout life. Parents are therefore urged, in their own interests, to secure the attainment of this certificate before withdrawing their sons from school life.

Physical Measurements and Tests, and Gymnastics.—In connection with the gymnastic exercises prescribed for all Forms, a series of measurements is taken during the first ten days of each session, and a permanent record of each boy's development kept. The measurements and tests are those prescribed by the Anthropological Society. They relate to—

(i) Height.
(ii) Weight.
(iii) Span of arms.
(iv) Lung capacity.
(v) Strength of hand and arm.
(vi) Eyesight.

Any defect under (vi) will be at once notified to parents.

No. *Date*

The High School of Glasgow.

Name			
Date			
Height			
Weight			
Span.....			
Lung Capacity.....			
Chest Measurement			
Strength, in lbs.....	Pull, as archer		
	Squeeze — Right Hand		
	Squeeze — Left Hand		
Eyesight	Right Eye		
	Left Eye		
	Colour Sense		
Hearing	Right Ear		
	Left Ear		
Development			
Nature of Exercise.....			
Remarks.....			
Advice.....			

Home Work.—The time devoted to home preparation varies from one hour in the lowest form to three in the highest, and the amount is calculated for the average boy.

Cadet Corps.—A fine feature in connection with the school is the Cadet Corps, 200 in number, which is attached to the First Lanarkshire Rifle Volunteer Corps. The objects of the corps are:—

(*a*) The improvement of physique.
(*b*) The inculcation of habits of obedience, discipline, and self-control.
(*c*) A quickened sense of school life and unity, and the development of public spirit.
(*d*) A realisation of the responsibilities which must be incurred, and the duties which must be discharged, by the citizens of the Empire.

Membership of the corps is not intended in any way as preparatory for or introductory to the profession of arms. Membership is confined to pupils of the school who are 12 years of age and over. Members are supplied with all the necessary accoutrements, but provide their own uniforms.

Pictures.—The school has an interesting and valuable collection of portraits and pictures. This collection is regularly enlarged by contributions from former pupils. The head master considers portraits and pictures as agencies which serve, not merely to beautify the school, but to add fullness and life to the teaching of the various subjects.

SYNOPSIS OF WORK AND TIME-TABLE—HIGH SCHOOL, GLASGOW.

Preparatory Classes.

Subjects.	Class I.	Class II.	Class III.
le Knowledge	The Gospel narrative.	The Gospel narrative.	Bible Stories (Old Testament), Macmillan.
lish—i. Reading, Spelling, Dictation. ii. Learning by heart. iii. rammar and Composition.	Sonnenschein, Part I; "A Book of Verses for Children" (B. V. Lucas), pub. Grant Richards.	Sonnenschein, Part II; Arnold's Language Lessons, I and II; Macmillan's New Literary Readers, I and II; The Elements of Composition—written and oral.	Sonnenschein, Parts III and IV: Arnold's Language Lessons, II and III; Macmillan's New Literary Readers, III.
ting (Penmanship and Printing) ..	Formation of letters on paper.	Easy Copy Book.	Copy Book.
tory	Lives of Great Men: lantern illustrations.	Simple outline of Scottish History: lantern illustrations.	Simple outline of Scottish History: lantern illustrations.
nce (Observational and Experiental)—Physics, Geography, Botany.	Clay Modelling to illustrate geographical terms, and lantern illustrations.	Countries of the world: Physical Geography of Scotland: Philip's "Glasgow" Atlas, lantern illustrations: Raised maps: Observation of simple experiments.	"Object-lessons in Geography and Science, I (Frew), pub. Blackie & Sons; Geography of Scotland more fully: lantern illustrations: simple experiments.
hematics—Arithmetic, Geometry ..	The formation of figures; simplest forms of mental arithmetic (the abacus and small objects).	The four rules of arithmetic: Simple problems in money.	More advanced exercises on the four rules.
wing	Simple exercises in chalk or crayon on blackboard or paper: Very easy forms with brush and colour on paper: Paper-cutting: Clay-modelling.	Simple exercises in the use of the pencil: Further exercises with chalk or crayon: Direct brush drawing of simple forms from nature: Use of ruler to measure accurately: Construction of square, oblong, and very simple border patterns.	As in II; Forms drawn direct from nature utilised to decorate spaces constructed in mechanical drawing: Construction of triangle, rhombus, trapezium, and other border patterns with ruler and set square.
ring	Easy songs.	Idea of notes (staff notation): easy songs.	Choir Pieces (easy).
l and Gymnastics	Swedish Drill.	Swedish Drill.	Free Gymnastics.

Subjects.	Class IV.	Class V.	Class VI.
e Knowledge	Bible Stories (Old Testament), Macmillan.	Bible Stories (New Testament), Macmillan.	Bible Stories (New Testament), Macmillan.
lish—i. Reading, Spelling, Dictation. ii. Learning by heart. iii. rammar and Composition.	Arnold's Language Lessons, IV: Macmillan's New Literary Readers, IV; Nesfield's Grammar.	Arnold's Language Lessons, V: Macmillan's New Literary Readers, IV: Nesfield's Grammar: Logical Analysis: Essays.	Arnold's Object-lessons, VI: "'Stops,' or How to punctuate" (Paul Allardyce): Macmillan's New Literary Readers, VI: Nesfield's Grammar: Logical Analysis: Essays.
ting (Penmanship and Printing)....	Copy Book.	Copy Book.	Copy Book.
ory	Outline of British History: lantern illustrations: The Britannia History Readers (Arnold).	Outline of British History: Outline of General History: The Britannia History Readers (Arnold).	As in V.
nce (Observational and Experiental)—Physics, Geography, Botany.	"Object-lessons in Geography and Science," II: "The Tellurium": Geography of the British Isles: lantern illustrations: Simple experiments: Botany.	Geography of the Colonies: Map-drawing: Experiments: Botany.	Geography of Europe: Experiments: Botany.
hematics—Arithmetic, Geometry ..	Practical application of the elementary rules of computation: The idea of fractions: Actual weights, practically used: Actual measurements, practically used: Blackie's Practical Arithmetic.	Fractions and Decimals: "Practical Geometry for Beginners" (Ginn & Co.)	Fractions and Decimals: "Practical Geometry for Beginners" (Ginn & Co.)
wing	(*a*) Drawing carefully from simple objects from nature and from ornament: (*b*) Drawing with the brush direct from nature; typical brush forms: (*c*) Tinting the exercises done in the mechanical section: Construction of the hexagon, octagon, and simple foiled figures with rulers and compasses.	(*a*) As in IV } More difficult (*b*) As in IV } examples. (*c*) Construction of simple scales: Drawing to scale from actual measurement.	(*a*) As in V } (*b*) As in V } More difficult examples. (*c*) As in V }
ring	Choir pieces.	Choir Pieces.	Choir Pieces.
l and Gymnastics	Free Gymnastics.	Free Gymnastics.	Free Gymnastics.

Classical Side.

Subjects.		1st Form.	2nd Form.	3rd Form.	4th Form.	5th Form.	6th Form.
lish	Reading and Composition.	Reading, Dictation, and Composition.	Reading, Dictation and Composition.	Reader and a Classic: Composition.	Reader and a Classic: Composition and Paraphrasing.	Principal Authors from the Period of History: Composition and Paraphrasing.	Principal Authors from the Period of History: Composition, &c.
	Grammar ...	Chambers' Grammar.	Chambers' Grammar.	Nesfield's Grammar.	Nesfield's Grammar.	Nesfield's Grammar.	Nesfield's Grammar.
	History.....	Warner's Brief Survey (pp. 1-50).	Warner's Brief Survey (pp. 51-123).	Warner's Brief Survey (pp. 124-193).	Warner's Brief Survey (revised and completed).	Ransome's History, from 1603.	Ransome's History (continued).
	Geography..	The Tweeddale Geography (England).	The Tweeddale Geography (The British Isles).	The Tweeddale Geography (The Great Powers).	The Tweeddale Geography (The Countries of Europe).	Longman's Geography, No. 2 (The British Possessions).	Longman's Geography.
	Bible knowledge.	Lessons as arranged at the beginning of each Session.					

Classical Side—*continued.*

Subjects.		1st Form.	2nd Form.	2nd Form.	4th Form.	5th Form.	6th Form.
Modern Languages.	French		French Primer and Reader.	Study of French Verb (to p. 75): Reader.	Havet's French Studies (lesson 1-20): French Verbs to p. 100.	Havet's French Studies (lessons 21-40): French Verbs to end.	Cassal & Kar (to p.43): Ha Studies (les 41-60): Fr Authors.
	German					Grammar (pp. 1-143): Reader (pp. 1-20).	Schlomka's G mar: Schlom Reader: Co sational E cise: Read from Schi Composition
Classics	Latin	Allen's Latin Grammar (pp. 1-25), including verb "Sum:" Kemp's Introductory Exercises (1-15): Latin Reading Lessons (1-15).	Allen's Latin Grammar (pp. 26-83): Short Latin Syntax, Rules: Kemp's Introductory Exercises (16-28): Latin Reading Lessons (16-28).	Revisal of Grammar to end of irregular verb (p. 117): Kemp's Introductory Exercises (contd.): Latin Reading Lessons (contd.): *Cæsar*, Invasion of Britain.	Rivisal of Grammar and Short Latin Syntax: *Cæsar*, De Bello Gallico, Bk. II: Bennett's First Latin Writer, ex. 51-75: Latin Drill Book: Roman History.	Grammar and Syntax: *Ovid*, Fasti and Epistles: *Livy*, Hannibalian War: Bennett's Latin Writer: History.	*Virgil: Cicero: Horace:* Syn Latin Prose position; quities.
	Greek			Rutherford's Greek Grammar (to end of λύω): Blomfield Jackson's 1st Steps in Greek Prose Composition, (1-11): Marchant's 1st Greek Reader (1-13).	Rutherford's Greek Grammar, Pt. I: Blomfield Jackson's 1st Steps in Greek Prose Composition (1-50): Marchant's 1st Greek Reader, Pt. I.	Grammar: Arrian's Anabasis: Greek Exercises: Greek History.	Grammar: Testament: *ophon: Eu des: Homer phocles:* Hist Greek Pr Composition Literature.
Mathematics	Arithmetic	Simple and Compound Proportion: Metric System: Mental Arithmetic.	Problems on Time, Work, and Velocity: Practice: Easy Mensuration: Sq. Root: Mental Arithmetic.	Chain Rule and Exchange: Ratio and Proportion: Distributive Proportion: Mental Arithmetic.	Percentages, Averages, Rates, Taxes: Bankruptcies; Profit and Loss: Mental Arithmetic.	Simple Interest: Commercial Discount and Bills: Compound Interest: Mental Arithmetic.	Present Wo True Disco Stocks Shares: rithm tal Fractions: mal Repeate
	Algebra	Addition and Subtraction: Use of Brackets: Substitution: Easy Equations.	Multiplication: Division: Equations: and Problems: Degree, Homogeneity, Symmetry.	Simple and Simultaneous Equations and Problems: Factors, H. C. F., and L. C. M.	Fractions: Cyclic Order: Harder Factors: Simple and Simultaneous Equations with Fractions.	Involution: Square Root: Quadratic Equations and Problems, with one unknown.	Quadric E tions, with or more knowns: blems: In and Surds: and Propor Progression
	Geometry...	Euclid, Book I: Definitions: Propositions 1, 4, 5, 6, 8-15, with exercises.	Euclid, Book I (1-48), with exercises.	Euclid, Bk. III (1-34), with exercises.	Euclid, Bks. I, II, and III, with exercises.	Euclid, Bk. IV, with exercises.	Euclid, Bks and XI; Mo Geometry.
Science		Elementary Science.					
Drawing		Drawing from Nature (charcoal, pencil, pen, and brush).	Drawing from Nature (charcoal, pencil, pen, and brush).				
Gymnastics.							

Modern Side.

Subjects.		1st Form.	2nd Form.	3rd Form.	4th Form.	5th Form.	6th Form
English	Reading and Composition.	Reading, Dictation, Composition.	Reading, Dictation, and Composition.	Reader and a Classic: Composition.	Reader and a Classic: Composition and Paraphrasing.	Principal Authors from the Period of History: Composition and Paraphrasing.	Principal Au from the P of History: position, &c
	Grammar ...	Chambers' Grammar.	Chambers' Grammar.	Nesfield's Grammar.	Nesfield's Grammar.	Nesfield's Grammar.	Nesfield's G mar.
	History	Warner's Brief Survey (pp. 1-50).	Warner's Brief Survey (pp. 51-123).	Warner's Brief Survey (pp. 124-193).	Warner's Brief Survey (revised and completed).	Ransome's History, from 1603.	Ransome's tory (contin
	Geography..	The Tweeddale Geography (England).	The Tweeddale Geography (The British Isles).	The Tweeddale Geography (The Great Powers).	The Tweeddale Geography (The Countries of Europe.)	Longman's Geography, No. 2 (The British Possessions).	Longman's graphy.
	Bible knowledge.			Lessons as arranged at	the beginning of each Session.		
Modern Languages.	French		French Primer and Reader.	Study of French Verbs pp. 1-75). : Reader.	Havet's French Studies (lessons 1-20): French Verbs to p. 100.	Havet's French Studies (lessons 21-40): French Verb to end.	Cassal and cher (to p. Havet's St (lessons 41 French Aut
	German			Schlomka's Grammar (pp. 1-43): Schlomka's Reader (pp. 1-10).	Schlomka's Grammar (pp. 143-255): Schlomka's Reader (pp. 10-50): Conversational Exercises.	Revisal of Grammar Composition: Reader: Conversational Exercises.	Composit Readings Classical Authors: versational ercises.
Classics	Latin	Allen's Latin Grammar, including verb "Sum": Kemp's Introductory Exercises (1-15): Reading Lessons (1-15).	Allen's Latin Grammar (p. 26-83): Short Latin Syntax, Rules: Kemp's Introductory Exercises (16-28): Latin Reading Lessons (16-28).	Revisal of Grammar to end of irregular verb (p. 117): Kemp's Introductory Exercises (continued): Latin Reading Lessons (contd.): *Cæsar*, Invasion of Britain.	Revisal of Grammar and Short Latin Syntax: *Cæsar*, De Bello Gallico, Book II: Bennett's First Latin Writer (ex. 71-75); Latin Drill Book: Roman History.	Grammar and Syntax: *Ovid*, Fasti and Epistles: *Livy*, Hannibalian War: Bennett's Latin Writer: History.	Syntax: Æneid: *Livy*: *Hor* Antiquities.
	Greek						

Modern Side—*continued.*

Subjects.		1st Form.	2nd Form.	3rd Form.	4th Form.	5th Form.	6th Form.
hematics	Arithmetic.	Simple and Compound Proportion: Metric System: Mental Arithmetic.	Problems on Time, Work, and Velocity, Practice: Easy Mensuration: Sq. Root: Mental Arithmetic.	Chain Rule and Exchange: Ratio and Proportion: Distributive Proportion: Mental Arithmetic.	Percentages, Averages: Rates, Taxes, Bankruptcies: Profit and Loss: Mental Arithmetic.	Simple Interest: Commercial Discount and Bills: Compound Interest: Mental Arithmetic.	Present Worth: True Discount: Stocks and Shares: Logarithm tables: Fractions: Decimal Repeaters.
	Algebra	Addition and Subtraction: Use of Brackets: Substitution: Easy Equations.	Multiplication, Division, Equations and Problems: Degree, Homogeneity: Symmetry.	Simple and Simultaneous Equations and Problems: Factors, H.C.F. and L.C.M.	Fractions: Cyclic Order: Harder Factors: Simple and Simultaneous Equations with Fractions.	Involution, Square Roots: Quadratic Equations and Problems with one unknown.	Quadratic Equations, with two or more unknowns: Problems, Indices and Surds, Ratio and Proportion, Progressions.
	Geometry...	Euclid, Book I: Definitions, &c.: Propositions, 1, 4, 5, 6, 8-15.	Euclid, Book I (1-48): with Exercises.	Euclid, Book III (1-34): with Exercises.	Euclid, Book I, II, and III, with Exercises.	Euclid, Book IV: with Exercises.	Euclid, Book VI and XI: Modern Geometry.
nce		Elementary Science.					
wing.....		Drawing from Nature (charcoal, pencil, pen, and brush).	Drawing from Nature (charcoal, pencil, pen, and brush).				
nnastics.							

Scientific Side (Latin).

Subjects.		1st Form.	2nd Form.	3rd Form.	4th Form.	5th Form.	6th Form.
lish	Reading and Composition.	Reading, Dictation, and Composition.	Reading, Dictation, and Composition.	Reader and a Classic: Composition.	Reader and a Classic: Composition and Paraphrasing.	Principal Authors from the period of History: Composition and Paraphrasing.	Principal Authors from the Period of History: Composition, &c.
	Grammar ...	Chambers' Grammar.	Chambers' Grammar.	Nesfield's Grammar.	Nesfield's Grammar.	Nesfield's Grammar.	Nesfield's Grammar.
	History	Warner's Brief Survey (pp. 1-50).	Warner's Brief Survey (pp. 51-123).	Warner's Brief Survey (pp. 124-193).	Warner's Brief Survey (revised and completed).	Ransome's History, from 1603.	Ransome's History (continued).
	Geography..	The Tweeddale Geography (England).	The Tweeddale Geography (The British Isles.)	The Tweeddale Geography (The Great Powers).	The Tweeddale Geography (The Countries of Europe).	Longman's Geography, No: 2 (The British Possessions).	Longman's Geography.
	Bible Knowledge.			Lessons as arranged at	the beginning of each Session.		
dern nguages.	French		French Primer and Reader.	Study of French Verb (to p. 75): Reader.	Havet's French Studies (lessons 1-20); French Verbs to p. 100.	Havet's French Studies (lessons 21-40); French Verbs to end.	Cassal and Karcher (to p. 43); Havet's Studies (lessons 41-60); French Authors.
	German.....			Schlomka's Grammar (pp. 1-143): Schlomka's Reader (pp. 1-10).	Grammar (pp. 143-255: Reader (pp. 10-30).	Revisal of Grammar Composition: Reader: Conversational Exercises.	Composition: Readings from Schiller and Goethe: Conversational Exercises.
ssics	Latin	Allen's Latin Grammar, including verb "sum": Kemp's Introductory Exercises (1-15): Reading Lessons (1-15).	Allen's Latin Grammar (p. 26-83): Short Latin Syntax, Rules: Kemp's Introductory Exercises (16-28): Reading Lessons (16-28).	Revisal of Grammar to end of irregular verb (p. 117): Kemp's Introductory Exercises: Reading Lessons: *Cæsar*, Invasion of Britain.			
	Greek						
hematics	Arithmetic.	Simple and Compound Proportion: Metric System: Mental Arithmetic.	Problems on Time, Work, and Velocity: Practice: Easy Mensuration: Sq. Root: Mental Arithmetic.	Chain Rule and Exchange: Ratio and Proportion: Distributive Proportion: Mental Arithmetic.	Percentages, Averages, Rates, Taxes: Bankruptcies: Profit and Loss: Mental Arithmetic.	Simple Interest: Commercial Discount and Bills: Compound Interest: Mental Arithmetic.	Present Worth: True Discount: Stocks and Shares: Logarithm Tables: Fractions: Decimal Repeaters.
	Algebra	Addition and Subtraction: Use of Brackets: Substitution: Easy Equations.	Multiplication: Division: Equations and Problems: Degree, Homogeneity, Symmetry.	Simple and Simultaneous Equations and Problems: Factors, H. C. F. and L. C. M.	Fractions: Cyclic Order; Harder Factors: Simple and Simultaneous Equations with Fractions.	Involution: Square Root: Quadratic Equations and Problems, with one unknown.	Quadratic Equations, with two or more unknown: Problems: Indices and Surds: Ratio and Proportion: Progressions.
	Geometry...	Euclid, Book I: Definitions: Propositions 1, 4, 5, 6, 8-15, with exercises.	Euclid, Book I (1-48), with exercises.	Euclid, Book III (1-34), with exercises.	Euclid, Books I, II, and III, with exercises.	Euclid, Book IV, with exercises.	Euclid, Books VI and XI: Modern Geometry.
nce		Elementary Science			Practical Physics Workshop.	Practical Physics (Heat).	Practical Physics Chemistry).
wing.....		Free Drawing from Nature: Mechanical Drawing.	Free Drawing from Nature: Mechanical Drawing.		Free Drawing from Nature (Scientific Apparatus): Drawing connected with Workshop Practice.	Sketching with Pen or Pencil in relation to Machine Construction and Drawing.	Machine Construction and Drawing.
nnastics							

Scientific Side (Non-Latin).

Subjects.		1st Form.	2nd Form.	3rd Form.	4th Form.	5th Form.	6th Form.
English	Reading and Composition.	Reading, Dictation, and Composition.	Reading, Dictation, and Composition.	Reader and a Classic: Composition.	Reader and a Classic: Composition and Paraphrasing.	Principal Authors from the period of History, Composition and Paraphrasing.	Principal Au from the p of History, position, &c
	Grammar ...	Chambers' Grammar.	Chambers' Grammar.	Nesfield's Grammar.	Nesfield's Grammar.	Nesfield's Grammar.	Nesfield's G mar.
	History	Warner's Brief Survey (pp. 1-50).	Warner's Brief Survey (pp. 51-123).	Warner's Brief Survey (pp. 124-193).	Warner's Brief Survey (revised and completed).	Ransome's History from 16.3.	Ransome's tory (contin
	Geography..	The Tweeddale Geography (England)	The Tweeddale Geography (The British Isles).	The Tweeddale Geography (The Great Powers).	The Tweeddale Geography (The Countries of Europe).	Longman's Geography No. 2 (The British Possessions).	Longman's graphy.
	Bible Knowledge	Lessons as arranged at the beginning of each Session.					
Modern Languages.	French	French Primer and Reader.	Amour's Study of French Verbs (pp. 1-75); Reader.	Havet's French Studies (Lessons 1-20): French Verbs to p. 100.	French Studies (Lessons 21-40): French Verbs to the end.	Cassal and Karcher's Course (pp. 1-20): Havet's Studies (41-60).	Cassal and cher's Cours 21-43): Fr Author.
	German.....		Schlomka's Grammar (pp. 1-143): Reader (pp. 1-10).	Grammar (pp. 143-255): Reader (pp. 20-40).	Revisal of whole Grammar, Reader: Conversational Exercises.	Composition: Reader (Poetry): Conversational Exercises.	Composit Readings Schiller Goethe: Co sational cises.
Classics	Latin						
	Greek						
Mathematics	Arithmetic.	Simple and Compound Proportion: Metric System: Mental Arithmetic.	Problems on Time, Work, and Velocity: Practice: Easy Mensuration: Sq. Root: Mental Arithmetic.	Chain Rule and Exchange: Ratio and Proportion: Distributive Proportion: Mental Arithmetic.	Percentages, Averages, Rates, Taxes, Bankruptcies: Profit and Loss: Mental Arithmetic.	Simple Interest: Commercial Discount and Bills: Compound Interest: Mental Arithmetic.	Present Wo True Disco Stocks Shares: rithm Ta Fractions: mal Repeate
	Algebra	Addition and Subtraction: Use of Brackets: Substitution: Easy Equations.	Multiplication: Division: Equations and Problems: Degree, Homogeneity, Symmetry.	Simple and Simultaneous Equations and Problems: Factors, H. C. F. and L. C. M.	Fractions: Cyclic Order: Harder Factors: Simple and Simultaneous Equations, with Fractions.	Involution: Square Root: Quadratic Equations and Problems, with one unknown.	Quadratic E tions, with t more unkno Problems: dices and Su Ratio and portion: gressions.
	Geometry...	Euclid, Book I: Definitions: Propositions 1, 4, 5, 6, 8-15, with exercises.	Euclid Book I (1-48), with exercises.	Euclid, Bk. III (1-34), with exercises.	Euclid, Bks. I, II, and III, with exercises.	Euclid, Book IV, with exercises.	Euclid, Bks and XI: Mo Geometry.
Science		Elementary Science		Botany.	Practical Physics Workshop.	Practical Physics (Heat).	Practical Ph (Heat and C istry).
Drawing.....		(a) Free Drawing from Nature and Objects: (b) Mechanical Drawing.	(a) Free Drawing from Nature and Objects: (b) Mechanical Drawing.	(a) Free Drawing from Nature and from Scientific Apparatus: (b) Elementary Solid Geometry and Scales: (c) Tinting.	(a) Free Drawing from Nature and from Scientific Apparatus: (b) Drawing connected with shop practice.	Sketching with Pen or Pencil in connection with Machine Construction and Drawing.	Machine struction Drawing.
Gymnastics..							

Non-Latin Side.

Subjects.		1st Form.	2nd Form.	3rd Form.	4th Form.	5th Form.
English	Reading and Composition.	Reading, Dictation, and Composition.	Reading, Dictation, and Composition.	Reader and a Classic: Composition.	Reader and a Classic: Composition and Paraphrasing.	Principal Authors the Period of Hist Composition and phrasing.
	Grammar	Chambers' Grammar.	Chambers' Grammar.	Nesfield's Grammar.	Nesfield's Grammar.	Nesfield's Gramma
	History	Warner's Brief Survey (pp. 1-50).	Warner's Brief Survey (pp. 51-123).	Warner's Brief Survey (pp. 124-193).	Warner's Brief Survey (revised and completed).	Ransome's History 1603.
	Geography	The Tweeddale Geography (England).	The Tweeddale Geography (The British Isles).	The Tweeddale Geography (The Great Powers).	The Tweeddale Geography (The Countries of Europe).	Longman's Geogr No. 2 (The Br Possessions).
	Bible Knowledge.		Lessons as	arranged at the begin	ning of each Session.	
Modern Languages.	French.....	French Primer and Reader.	Amour's Study of French Verbs (pp. 1-75): Reader.	Havet's French Studies (lessons 1-20): French Verbs to p. 100.	French Studies (lessons 21-40): French Verbs to the end.	Cassal and Karch Course (pp. 1- Havet's Studies 60).
	German		Schlomka's Grammar (pp. 1-143): Reader (pp. 1-10).	Grammar (pp. 143-255): Reader (pp. 20-40).	Revisal of whole Grammar: Reader: Conversational Exercises.	Composition: Re (Poetry): Conv tional Exercises.

NON-LATIN SIDE—*continued.*

Subject.		1st Form.	2nd Form.	3rd Form.	4th Form.	5th Form.
athematics.....	Arithmetic.....	Simple and Compound Proportion: Metric System: Mental Arithmetic.	Problems on Time, Work, and Velocity: Easy Mensuration: Square Root: Mental Arithmetic.	Chain Rule and Exchange: Ratio and Proportion: Distributive Proportion: Mental Arithmetic.	Percentages, Averages, Rates, Taxes, Bankruptcies: Profit and Loss: Mental Arithmetic.	Simple Interest: Commercial Discount and Bills: Compound Interest: Mental Arithmetic.
	Algebra	Addition and Subtraction: Use of Brackets: Substitution: Easy Equations.	Multiplication: Division: Equations and Problems: Degree, Homogeneity, Symmetry.	Simple and Simultaneous Equations and Problems: Factors, H.C.F. and L.C.M.	Fractions: Cyclic Order: Harder Factors: Simple and Simultaneous Equations with Fractions.	Involution: Square Root: Quadratic Equations and Problems, with one unknown.
	Geometry	Euclid, Book I: Definitions: Propositions 1, 4, 5, 6, 8-15, with exercises.	Euclid, Book I (1-48), with exercises.	Euclid, Book III (1-34), with exercises.	Euclid, Books I, II, and III, with exercises.	Euclid, Book IV, with exercises.
cience		Elementary Science.		Botany.	Practical Physics.	Practical Physics.
rawing		(*a*) Free Drawing from Nature: (*b*) Mechanical Drawing.	(*a*) Free Drawing from Nature. (*b*) Mechanical Drawing.	(*a*) Free Drawing from Nature and from Scientific Apparatus: (*b*) Elementary Solid Geometry and Scales: (*c*) Tinting.	Free Drawing from Nature and from Scientific Apparatus.	Sketching from Pen and Pencil in connection with Machine Construction and Drawing.
ymnastics.....						

JUNIOR SCHOOL AND PREPARATORY CLASSES. TIME TABLE OF CLASSES I, II, AND III.

Hours—10 to 3, with interval of 50 minutes.

Hours.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.
10·0 to 10·55.....	Prayer. Bible Lesson. Geography.	Prayer. Bible Lesson. Science.	Prayer. Bible Lesson. Arithmetic.	Prayer. Bible Lesson. Science.	Prayer. Bible Lesson. Geography.
11·0 to 11·45.....	English. Arithmetic.	English. Writing.	English. Arithmetic.	English. Writing.	English. Arithmetic.
11·50 to 12·20.....	Writing.	Drawing.	Recitation.	English.	Drawing.
	Interval.				
1·15 to 1·55.....	History. Drawing.	Writing. English.	History. Writing.	Arithmetic.	Singing.
2·0 to 3·0.....	English. Arithmetic.	Arithmetic.	English.	Drawing. English.	Drill.

SUMMARY.

	Periods.
English.....	10
Arithmetic.....	5
Writing	3
Drill	1
Drawing	3
Science	2
Singing	1
	25

JUNIOR SCHOOL.

Hours.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.
9·15 to 10·5	Prayer. Bible. Mathematics.	Prayer. Bible. Mathematics.	Prayer. Bible. Mathematics.	Prayer. Bible. Mathematics.	Prayer. Bible. Mathematics.
10·10 to 10·55	Dictation. Grammar.	Dictation. Grammar.	Dictation. Grammar.	Dictation. Grammar.	Dictation. Grammar.
11·0 to 11·45.....	Reading.	Reading.	Reading.	Reading.	Reading.
11 ·50 to 12 20	Writing.	Writing.	Writing.	Writing.	Gymnastics.
	Interval.				
1·15 to 1·55	Mathematics.	Mathematics.	Mathematics.	Mathematics.	Science.
2·0 to 2·40.....	History. Geography.	Science.	History. Geography.	Drawing.	Drawing.
2·45 to 3·30	Drawing.	Composition.	Gymnastics.	Games.	Singing.

SUMMARY.

	Periods.
English.....	13
Mathematics ...	9
Drawing	3
Science.....	2
Writing	4
Gymnastics.....	2
Singing.....	1
Games	1
	35

FORM I.—LATIN SIDE. SESSION 1902-1903.

Hours.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.
9·15 to 10·5	English.	English.	English.	English.	English.
10·10 to 10·55	Mathematics.	Mathematics.	Mathematics.	Mathematics.	Mathematics.
11·0 to 11·45.....	English.	English.	English.	English.	English.
11·50 to 12·30	Gymnastics.	Drawing.	Gymnastics.	Drawing.	Singing.
	Interval.				
1·15 to 1·55	Latin.	Latin.	Latin.	Latin.	Latin.
2·0 to 2·40.....	Mathematics.	Science.	Mathematics.	Science.	Mathematics.
2·45 to 3·30	Latin.	Latin.	Games.	Latin.	Latin.

SUMMARY.

	Periods.
English	10
Latin	9
Mathematics and Science	10
Drawing	2
Singing	1
Gymnastics ...	2
Games	1
	35

FORM I.—NON-LATIN SIDE. SESSION 1902–1903.

Hours.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.
9·15 to 10·5	English.	English.	English.	English.	English.
10·10 to 10·55	Mathematics.	Mathematics.	Mathematics.	Mathematics.	Mathematics.
11·0 to 11·45.....	English.	English.	English.	English.	English.
11·50 to 12·30	French.	French.	French.	French.	French.
	Interval.				
1·15 to 1·55	Gymnastics.	Drawing.	Gymnastics	Drawing.	Singing.
2·0 to 2·40.....	Mathematics.	Science.	Mathematics.	Science.	Mathematics.
2·45 to 3·30	French.	French.	Games.	French.	French.

SUMMARY.

	Periods.
English	10
French	9
Mathematics and Science	10
Drawing.....	2
Singing	1
Gymnastics ...	2
Games.....	1
	35

FORM II.—LATIN SIDE. SESSION 1902–1903.

Hours.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.
9·15 to 10·5	Mathematics.	Mathematics.	Mathematics.	Mathematics.	Mathematics.
10·10 to 10·55	English.	English.	English.	English.	English.
11 to 11·45.....	Latin.	Gymnastics.	Latin.	Gymnastics.	Latin.
11·50 to 12·30	Latin.	Latin.	Latin.	Latin.	Latin.
	Interval.				
1·15 to 1·55	French.	Mathematics.	French.	Mathematics.	Mathematics.
2·0 to 2·40.....	French.	French.	French.	French.	French.
2·45 to 3·30	English.	Drawing.	Games.	Drawing.	English.

SUMMARY.

	Periods
English	7
French.....	7
Latin	8
Mathematics ...	8
Drawing	2
Gymnastics ...	2
Games	1
	35

FORM II.—NON-LATIN SIDE. SESSION 1902-1903.

Hours.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.
9·15 to 10·5	Mathematics.	Mathematics.	Mathematics.	Mathematics.	Mathematics.
10·10 to 10·55	English.	English.	English.	English.	English.
11·0 to 11·45.	German.	German.	German.	German.	German.
11·50 to 12·30	German.	Gymnastics.	German.	Gymnastics.	German.
	Interval.				
1·15 to 1·55	French.	Mathematics.	French.	Mathematics.	Drawing.
2·0 to 2·40.....	French.	French.	French.	French.	French.
2·45 to 3·30	English.	Mathematics.	Games.	English.	Drawing.

SUMMARY.

	Periods.
English	7
French	7
German	8
Mathematics ...	8
Drawing	2
Gymnastics	2
Games	1
	35

FORM III.—CLASSICAL SIDE. SESSION 1902-1903.

Hours.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.
9·15 to 10·5	Greek.	Greek.	Greek.	Greek.	Greek.
10·10 to 10·55	French.	French.	French.	French.	French.
11·0 to 11·45	Mathematics.	Mathematics.	Mathematics.	Mathematics.	Mathematics.
11·50 to 12·30	English.	English.	English.	English.	English.
	Interval.				
1·15 to 1·55	Greek.	Greek.	Latin.	Greek.	Latin.
2·0 to 2·40.....	Latin.	Latin.	Latin.	Latin.	Latin.
2·45 to 3·30	Mathematics.	Gymnastics.	Games.	Gymnastics.	Mathematics.

SUMMARY.

	Periods.
English	5
Latin.....	7
Greek	8
French	5
Mathematics ...	7
Gymnastics.....	2
Games	1
	35

FORM III.—MODERN AND SCIENTIFIC SIDE. SESSION 1902-1903.

Hours.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.
9·15 to 10·5	German.	German.	German.	German.	German.
10·10 to 10·55	French.	French.	French.	French.	French..
11·0 to 11·45.....	Mathematics.	Mathematics.	Mathematics.	Mathematics.	Mathematics.
11·50 to 12·30	English.	English.	English.	English.	English.
	Interval.				
1·15 to 1·55	German.	German.	French.	German.	Latin.
2·0 to 2·40.....	Latin.	Latin.	Latin.	Latin.	Latin.
2·45 to 3·30	Mathematics.	Gymnastics.	Games.	Gymnastics.	Mathematics.

SUMMARY.

	Periods.
English.....	5
French	6
German	8
Latin.....	6
Mathematics...	7
Gymnastics ...	2
Games	1
	35

FORM III.—NON-LATIN SIDE. SESSION 1902-1903.

Hours.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.
9·15 to 10·5	German.	German.	German.	German.	German.
10·10 to 10·55	French.	French.	French.	French.	French.
11·0 to 11·45	Mathematics.	Mathematics.	Mathematics.	Mathematics.	Mathematics.
11·50 to 12·30	English.	English.	English.	English.	English.
	Interval.				
1·15 to 1·55	Drawing.	German.	Drawing.	German.	French.
2·0 to 2·40	Gymnastics.	Mathematics.	English.	Mathematics.	Gymnastics.
2·45 to 3·30	Mathematics.	Science.	Games.	Science.	Mathematics.

SUMMARY.

	Periods.
English	6
French	6
German	7
Mathematics	9
Science	2
Drawing	2
Gymnastics	2
Games	1
	35

FORM IV.—CLASSICAL SIDE. SESSION 1902-1903.

Hours.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.
9·15 to 10 5	Latin.	Latin.	Latin.	Latin.	Latin.
10·10 to 10 55	Greek.	Greek.	Greek.	Greek.	Greek.
11·0 to 11·45	French	French.	French.	French.	French.
11·50 to 12·30	Mathematics.	Mathematics.	Mathematics.	Mathematics.	Mathematics.
	Interval.				
1·15 to 1·55	Mathematics.	Latin.	Mathematics.	Latin.	Latin.
2·0 to 2·40	English.	English.	Greek.	English.	English.
2 45 to 3·30	Gymnastics.	Greek.	Games.	Greek.	Gymnastics.

SUMMARY.

	Periods.
English	4
French	5
Latin	8
Greek	8
Mathematics	7
Gymnastics	2
Games	1
	35

FORM IV.—MODERN SIDE. SESSION 1902-1903.

Hours.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.
9·15 to 10·5	Latin.	Latin.	Latin.	Latin.	Latin.
10·10 to 10·55	German.	Gymnastics.	German.	Gymnastics.	German.
11·0 to 11·45	French.	French.	French.	French.	French.
11·50 to 12·30	Mathematics.	Mathematics.	Mathematics.	Mathematics.	Mathematics.
	Interval.				
1·15 to 1·55	Mathematics.	Latin.	Mathematics.	Latin.	French.
2·0 to 2·40	English.	English.	English.	English.	English.
2·45 to 3·30	German.	German.	Games.	German.	German.

SUMMARY.

	Periods.
English	5
French	6
German	7
Latin	7
Mathematics	7
Gymnastics	2
Games	1
	35

FORM IV.—SCIENTIFIC SIDE. SESSION 1902-1903.

Hours.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.
9·15 to 10·55	Practical Physics.	Workshop.	Practical Physics.	Drawing.	Practical Physics.
11·0 to 11·45	French.	French.	French.	French.	French.
11·50 to 12·30	Mathematics.	Mathematics.	Mathematics.	Mathematics.	Mathematics.
	Interval.				
1·15 to 1·55	Mathematics.	Gymnastics.	Mathematics.	Gymnastics.	Mathematics.
2·0 to 2·40	English.	English.	German.	English.	English.
2·45 to 3·30	German.	German.	Games.	German.	German.

SUMMARY.

	Periods.
English	4
French	5
German	5
Mathematics	8
Practical Physics	6
Workshop	2
Drawing	2
Gymnastics	2
Games	1
	35

FORM IV.—NON-LATIN SIDE. SESSION 1902-1903.

Hours.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.
9·15 to 10·5	Drawing.	Practical Physics.	Drawing.	Practical Physics.	French.
10·10 to 10·55	German.	Practical Physics.	German.	Practical Physics.	German.
11·0 to 11·45	French	French.	French.	French.	French.
11·50 to 12·30	Mathematics.	Mathematics.	Mathematics.	Mathematics.	Mathematics.
	Interval.				
1·15 to 1·55	Mathematics.	Gymnastics.	Mathematics.	Gymnastics.	Mathematics.
2·0 to 2 40	English.	English.	English.	English.	English.
2·45 to 3·30	German.	German.	Games.	German.	German.

SUMMARY.

	Periods.
English	5
French	6
German	7
Mathematics	8
Practical Physics	4
Drawing	2
Gymnastics	2
Games	1
	35

FORM V.—CLASSICAL SIDE. SESSION 1902–1903.

Hours.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.
9·15 to 10·5	Mathematics.	Mathematics.	Mathematics.	Mathematics.	Mathematics.
10·10 to 10·55	Mathematics.	German.	Mathematics.	German	Gymnastics.
11·0 to 11·45.....	Latin.	Latin.	Latin.	Latin.	Latin.
11·50 to 12·30	Greek.	Greek.	Greek	Greek.	Greek.
	Interval.				
1·15 to 1·55	English.	English.	Latin.	English.	English.
2·0 to 2·40.....	German.	German.	Latin.	Latin.	German.
2·45 to 3·30	Gymnastics.	Greek.	Games.	Greek.	Greek.

SUMMARY.

	Periods.
English	4
German.....	5
Latin.....	8
Greek.....	8
Mathematics....	7
Gymnastics.....	2
Games.....	1
	35

FORM V.—MODERN SIDE. SESSION 1902–1903.

Hours.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.
9·15 to 10·5	Mathematics.	Mathematics.	Mathematics.	Mathematics.	Mathematics.
10·10 to 10·55	Mathematics.	German.	Mathematics.	German.	Gymnastics.
11·0 to 11·45.....	Latin.	Latin.	Latin.	Latin.	Latin.
11·50 to 12·30	German.	French.	German.	French.	Gymnastics.
	Interval.				
1·15 to 1·55	English.	English.	English.	English.	English.
2·0 to 2·40.....	German.	German.	Latin.	Latin.	German.
2·45 to 3·30	French.	French.	Games.	French.	French.

SUMMARY.

	Periods.
English	5
French.....	6
German	7
Latin.....	7
Mathematics ...	7
Gymnastics.....	2
Games.....	1
	35

FORM V.—SCIENTIFIC SIDE.

Hours.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.
9·15 to 10·5	Mathematics.	Mathematics.	Mathematics.	Mathematics.	Mathematics.
10·10 to 10·55	Mathematics.	German.	Mathematics.	German.	Mathematics.
11·0 to 12·30.....	Practical Physics.	Practical Physics.	Drawing.	Practical Physics.	Practical Physics.
	Interval.				
1·15 to 1·55	English.	English.	French.	English.	English.
2·0 to 2·40.....	German.	German.	Gymnastics.	Gymnastics.	German.
2·45 to 3·30	French.	French.	Games.	French.	French.

SUMMARY.

	Periods.
English	4
French.....	5
German	5
Mathematics ...	8
Practical Physics ...	8
Drawing	2
Gymnastics.....	2
Games	1
	35

FORM V.—NON-LATIN SIDE. SESSION 1902-1903.

Hours.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.
9·15 to 10·5.....	Mathematics.	Mathematics.	Mathematics.	Mathematics.	Mathematics.
10·10 to 10·55.....	**Commercial Arithmetic.**	German.	**Commercial Arithmetic.**	German.	**Commercial Arithmetic.**
11·0 to 11·45.....	**Principles of Book-keeping.**	**Economics.**	Practical Physics.	**Economics.**	**Principles of Book-keeping.**
11·50 to 12·30	**Commercial Crops and Plants, and their Products.**	**Précis Writing.**	Practical Physics.	French.	**Commercial Crops and Plants, and their Products.**
	Interval.				
1·15 to 1·55	English.	English.	English.	English.	English.
2·0 to 2·40.....	German.	German.	Gymnastics.	Gymnastics.	German.
2·45 to 3·30.....	French.	French.	Games.	French.	French.

SUMMARY.

	Periods.
English	5
French.....	5
German	5
Mathematics ...	5
Practical Physics.....	2
Gymnastics.....	2
Games	1
Special Commercial.....	10
	35

Heavy type denotes distinctively commercial subjects.

FORM VI.—CLASSICAL SIDE. SESSION 1902–1903.

Hours.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.
9·15 to 10·5	Greek.	Greek.	Greek.	Greek.	Greek.
10·10 to 10·55	Latin.	Gymnastics.	Latin.	Gymnastics.	Latin.
11·0 to 11·45.....	German.	Mathematics.	Mathematics.	Mathematics.	German.
11·50 to 12·30	Mathematics.	German.	Mathematics.	German.	Mathematics.
	Interval.				
1·15 to 1·55	English.	Latin.	English.	Latin.	English.
2·0 to 2·40.....	Latin.	Latin.	German.	Latin.	Latin.
2·45 to 3·30	Greek.	Greek.	Games.	Greek.	Greek.

SUMMARY.

	Periods.
English	3
German	5
Latin.....	9
Greek	9
Mathematics ...	6
Gymnastics.....	2
Games	1
	35

FORM VI.—MODERN SIDE. SESSION 1902–1903.

Hours.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.
9·15 to 10·5	French.	French.	French.	French.	French.
10·10 to 10·55	Latin.	Gymnastics.	Latin.	Gymnastics.	Latin.
11·0 to 11·45.....	German.	Mathematics.	Mathematics.	Mathematics.	German.
11·50 to 12·30	Mathematics.	German.	Mathematics.	German.	Mathematics.
	Interval.				
1·15 to 1·55	English.	French.	English.	French.	English.
2·0 to 2·40.....	Latin.	Latin.	German.	German.	Latin.
2·45 to 3·30	English.	English.	Games.	German.	English.

SUMMARY.

	Periods.
English	6
French	7
German	7
Latin.....	6
Mathematics ...	6
Gymnastics ...	2
Games	1
	35

FORM VI.—SCIENTIFIC SIDE. SESSION 1902–1903.

Hours.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.
9·15 to 10·5	French.	French.	French.	French.	Drawing.
10·10 to 10·55	Gymnastics.	Mathematics.	Gymnastics.	Mathematics.	Drawing.
11·0 to 11·45	German.	Mathematics.	Mathematics.	Mathematics.	German.
11·50 to 12·30	Mathematics.	German.	Mathematics.	German.	Mathematics.
	Interval.				
1·15 to 1·55	English.	Mathematics.	English.	Mathematics.	English.
2·0 to 2·40.....	Practical Physics.	Practical Physics.	German.	Practical Physics.	Practical Physics.
2·45 to 3·30	Practical Physics.	Practical Physics.	Games.	Practical Physics.	Practical Physics.

SUMMARY.

	Periods.
English.....	3
French	4
German	5
Mathematics ...	10
Practical Physics.....	8
Drawing	2
Gymnastics.....	2
Games	1
	35

FORM VI.—COMMERCIAL SIDE. SESSION 1902–1903.

Hours.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.
9·15 to 10·5	French.	French.	French.	French.	French.
10·10 to 10·55	Gymnastics.	**Commercial Arithmetic.**	Gymnastics.	**Commercial Arithmetic.**	**Commercial Arithmetic.**
11·0 to 11·45.....	German.	**Economics.**	**Economics.**	**Economics.**	German.
11·50 to 12·30	**Commercial Crops and Plants, and their Products.**	German.	**Précis Writing.**	German.	**Commercial Crops and Plants, and their Products.**
	Interval.				
1·15 to 1·55	English.	**Commercial Geography.**	English.	**Commercial Geography.**	English.
2·0 to 2·40.....	Mathematics.	Mathematics.	German.	Mathematics.	Mathematics.
2·45 to 3·30	**Principles of Book-keeping.**	**Commercial History.**	Games.	**Commercial History.**	**Principles of Book-keeping.**

SUMMARY.

	Periods.
English	3
French	5
German	5
Mathematics ...	4
Gymnastics ...	2
Games	1
Special Commercial.....	15
	35

Heavy type denotes distinctively commercial subjects.

ENDOWED SCHOOL—ALLAN GLEN'S.

Allan Glen's School, Glasgow.—This institution was founded with the object of giving gratuitously a good practical education to the sons of tradesmen or persons in the industrial classes of society. By an Act passed in 1876 the school ceased to supply gratuitous elementary education, and was organised so as to offer a high-class secondary and technical education specially considered with reference to the training of boys intended for industrial and mercantile pursuits.

In the 1902–1903 prospectus it is stated that the aim of the school is to give its pupils such courses of training and instruction that they may, at the age of 16 or 17, proceed with profit to college, or enter practical life possessing well-developed faculties and useful attainments. Due regard is therefore paid to the requirements of a sound, general education. The school is inspected by the Scotch Education Department, and pupils are prepared for the Leaving Certificate Examinations. It has been also arranged that the pupils of the school may receive the advantage of a careful, progressive, and extensive training in science, in art, and in workshop exercises. Such subjects, however, are selected not only as being in themselves essentially useful, but more particularly as being valuable appliances for aiding intellectual growth. In the Advanced or Technical Classes, special attention is devoted to the relation of science and art, to manufactures and commerce.

The Method of the School.—According to a scheme drawn up by the Educational Endowments Commissioners in 1886—

"The subjects to be taught in the School shall include Reading, Writing, Arithmetic, Geography and History, English Grammar, Composition and Literature, Latin, French and German, Mathematics, Freehand, Geometrical, Mechanical, and Architectural Drawing, the elements of Mechanics, Physics, and Chemistry, and such other scientific and technical subjects as the governors may see fit to introduce. Greek

Greek shall not be taught in the school. The classes in Mechanics, Physics, and Chemistry shall in all cases be associated with sufficient experimental demonstration and practical teaching, and the governors shall provide laboratory accommodation for the purpose. The use of tools shall be taught in workshops to be provided by the governors but not the practice of any specific trade."

Organisation.—The school is divided into a primary department with two classes, pupils starting about the age of 10; and a secondary department with five classes, pupils starting about the age of 12.

Syllabus.—The Syllabus is as follows :—

PRIMARY DEPARTMENT.

Class I.—Junior Preparatory Class.—(Fee, 11s. per Term.)

The work done in this class is mainly that of Standard IV, Scotch Code. The pupils receive special training in Composition, Mental Arithmetic, Freehand Drawing, Physical Exercise, and Manual Instruction.

Text-books.—Chambers's Graduated Reader, No. IV.; a Junior History; Chambers' Geography of the World; Lock's Arithmetic, Part I.; Blackie's Mental Arithmetic; a Book of Selections in Prose and Verse; Elementary Grammar.

Class II.—Senior Preparatory Class.—(Fee, 15s. per Term.)

The work of this class is a continuation of that of Class I, and includes the subjects of Standard V, Scotch Code. The pupil may also take Latin or a modern language.

Text-books.—Chambers' Graduated Reader, No. V; 'History of England; Chambers' Geography of the World; Lock's Arithmetic, Part I; Blackie's Mental Arithmetic; Elementary Grammar; Selections in Prose and Verse.

SECONDARY DEPARTMENT.

Class I.—(Fee, 22s. per Term.)

This class consists of a higher and a lower section. The course of study, while in advance of Sixth Standard requirements, has been arranged with regard to the fact that the majority of the pupils are now entering on a curriculum which extends over four years, and accordingly the main object of the teachers is to encourage habits of self-reliant mental activity. The more important subjects are English Grammar and Composition, Arithmetic, including Exercises in Mental Calculation, Drawing from the flat and from models, Geometry, and Geometrical Drawing, Reading, Geography, History, a Language, Manual Instruction, and Elementary Science.

Text-books.—Chambers' Graduated Reader, No. VI; History of England; Chambers' Geography of the World; Dunlop's English Grammar; Elementary Geometry; Lock's Arithmetic; Mental Arithmetic; Janton's First French Course.

Class II.—(Fee, 30s. per Term.)

This class, consisting of several sections in various degrees of advancement, extends the studies of the previous year, and receives a training in Mathematics, Freehand Drawing (2nd grade), Practical Plane and Solid Geometry, Inorganic Chemistry (theoretical and practical), and Physics (theoretical and practical.) There is also some time set apart for workshop practice, and for drawing associated therewith.

Text-books.—English Literature; English Grammar; Blackie's Geography; Mental Arithmetic; Deighton's Euclid; Angel's Practical Plane Geometry; Elementary Algebra; Kerr's Practical Physics; Cheetham's Practical Chemistry; a Language Manual.

Class III.—(Fee, 36s. per Term.)

The pupils at this stage undertake the Second Year's Course of an Organised Science School, which includes more advanced instruction in Drawing, Solid Geometry, Mathematics, Mechanics, Natural Philosophy and Chemistry. The English and Language studies are continued. Three hours per week are spent in the workshop, the exercises in all cases being from drawings made by the pupils.

Text-books.—English Composition; an English Classic; Mill's Commercial Geography; Angel's Practical Plane and Solid Geometry; Euclid; Elementary Algebra; Trigonometry; Practical Physics; Practical Chemistry; French, German, and Latin Manuals (according to progress of pupil).

Classes IV and *V.*—(Fee, 42s. per Term.)

These classes, while mainly engaged on the subjects of study which belong to the advanced courses laid down in the Board of Education's scheme for Organised Science Schools, supply a serviceable preparation for industrial and commercial life, and at the same time enable earnest and capable lads to enter the Technical College or the University with fair promise of successful careers.

Individual work in the chemical and physical laboratories and in the workshop is a marked feature of these higher classes. The accommodation and equipment provided by the Governors for the carrying on of this personal, practical work confer upon the school a special character, and add to the curriculum advantages regarding the importance of which educational authorities are agreed.

At the same time, the liberal culture associated with a training in Language and Literature, is kept well in view, and the pupils of these classes are expected to obtain Leaving Certificates of the Scotch Education Department.

Pupils of Class IV who have worked successfully through the first year of the advanced course, may be permitted to specialise their studies to some extent; their work falling under one or other of two divisions—(1) the Chemical division, (2) the Mechanical division. Common to these two divisions are, however, such subjects as Mathematics, Solid Geometry, Physics, Drawing, and Languages.

Pupils who reach Class V are expected to specialise, and the following courses indicate the directions in which their tudies may proceed :—

1. Mechanical and Electrical Engineering.—Mathematics, Practical Solid Geometry, Applied Mechanics, Steam and the Steam Engine, Magnetism and Electricity, Elements of Machine Design, Working in Wood and Metal, Drawing.
2. Chemistry.—Chemistry (Organic and Inorganic), Physics, Mathematics, Drawing.
3. Art.—Freehand, Model, and Perspective Drawing, Elementary Principles of Design, Elements of Architectural Drawing, Exercises in Colour, Modelling in Clay, Working in Wood and Metal, Mathematics.

Statement of the Course of Study in (1) Mathematics and Physics, (2) Engineering, (3) Chemistry, (4) Art, and (5) the Use of Tools; with an account of the appliances and accommodation provided for the teaching of these subjects :

(1) Mathematics.—Beginning in Class II with Geometry and Algebra, Trigonometry is added in Class III, and all three continued in Class IV up to the level of the third stage of the Science and Art Department syllabus. Classes IV and V study, in addition, the Elements of Solid Geometry, and the Geometry of the Conic Sections. Most of the pupils in Class V begin Analytical Geometry, and some are introduced to the Differential and Integral Calculus. The whole course corresponds to the first six stages of the Board of Education's scheme of Mathematical Instruction.

Physics.—All the pupils of Class II undergo instruction in the elements of Physics. It is, however, in the Physical Laboratory, rather than in the class-room, that a sound knowledge of fundamentals can be acquired. Accordingly, a course of well-considered practical work has been arranged. The pupil is brought face to face with the facts, he arranges the appliances, makes his own observations and measurements, and records his results in a plain manner. By means of simple apparatus and careful experiments, he works his way to a comprehension of the meaning of volume, mass, density, force, elasticity, heat, temperature, &c. In Class III this practical work is pushed farther, and associated with more theoretical instruction. Classes IV and V investigate the phenomena of heat and electricity, and by dealing with the facts quantitatively, get a much stronger grasp of the principles on which these sciences are based.

(2) Engineering.—Before taking up Machine Drawing, Applied Mechanics and Steam, in Classes IV and V, the pupils have received in the preceding classes a sound knowledge of Mathematics, Solid Geometry, Heat and Theoretical Mechanics, and should be able to overtake successfully the work of the advanced stages of Solid Geometry, Machine Drawing, Mechanics and Steam, before their curriculum terminates. The room set part for this work is spacious, fitted with drawing tables, and well supplied with models. For the practical study of Steam and the Steam-engine, arrangements are made for experiments and demonstrations in the engine-room.

(3) Chemistry.—Class II is introduced to Elementary Chemistry. Great stress is placed upon laboratory work, as it is felt that the young student of Chemistry cannot be led to his subject satisfactorily, except through a course of experimental work, in which he must do his own experiments, make his own observations, and find his way, with a minimum of help, to his conclusions. Accordingly, such a course is provided. Class III adds a knowledge of the preparation and properties of metallic compounds, deals more with quantitative relations, and practises advanced analysis. Class IV proceeds to study the preparation and analysis of organic compounds. In Class V particular reqnirements of pupils are considered, and arrangments are made for instruction in "Advanced" Organic Chemistry, in Metallurgy, in Quantitative Analysis, and in the "Honours" work of Inorganic Chemistry.

For teaching purposes two lecture halls and two completely equipped laboratories are available. The "advanced" laboratory accommodates 24 pupils working at the same time. The large "elementary" laboratory has places for 66 students; it is lighted by electricity, and ventilated by means of long horizontal shafts connected with a lofty stalk.

(4) Art.—The training in Art begins with the youngest boys, and is carried on systematically through the whole curriculum of the school. Graduated exercises in rapid sketching, in colour, and in design are introduced early. Advanced pupils have the opportunity of working out in wood, clay, or metal, their designs. All pupils are expected to pass the Department's Examinations in Freehand, Model, and Perspective Drawing. Many pupils of Classes III, IV, and V practise shading from models and from the cast, Outline Drawing from the cast, and perspective.

(5) The Use of Tools.—The training afforded by exercises in the workshop is a marked feature of the Allan Glen's School, and appears in the curriculum of every class. The boys of Class II spend two hours per week under the supervision of an experienced teacher and a highly capable tradesman, in working through a graduated series of exercises in wood. While the exercises are essentially practical and tradesmanlike, requiring for their performance joiners' benches, planes, chisels, saws, and the other details of a kit of tools, the object aimed at is a training in habits of accurate and steady effort, in the co-ordination of hand and eye, and in the full interpretation of drawings. Each piece of work is done from a drawing prepared by the pupil from models or from instructions. In Class III more advanced exercises in hardwood jointings, in wood-turning, and in simple pattern-making, are carried on. This class spends at least three hours per week in the workshop. Classes IV and V have at least four hours of this training, and are able to obtain considerable experience in pattern-making and in metal work. All such work is (apart from the training in co-ordinated effort) merely regarded as the natural test and extension of their instruction in the Mechanical and Art Drawing-rooms. As a further test and training the more advanced boys will have an opportunity of moulding from their patterns, and of casting in brass, zinc, or tin. The accommodation and appliances for this work are very complete. The workshop is large, airy, and well lighted. It contains joiners' benches, fitters' benches, twelve turning lathes for wood and metal, a drilling machine, sheet metal tools, forge, &c. Over eighty pupils, working separately, can be employed at one time. In a large room, immediately beneath, a steam engine and boiler supply power to the dynamo for electric lighting, and drive the machines in the workshop.

Leaving Certificates.

1. Pupils are prepared for examination under the leaving certificate scheme of the Scotch Education Department in (1) Science, including all the science and technical subjects of Classes II, III, IV, and V; and (2) in English, French, German, and Latin.

2. A school leaving certificates, which is accepted *pro tanto*, in the diploma curriculum of the Glasgow and West of Scotland Technical College, has been instituted. This certificate will testify to the length and character of the course, and will contain a record of the highest successes attained by the pupil in Government examinations.

The school, as is the case with the foundation schools of Edinburgh, is richly endowed with bursaries and scholarships.

APPROXIMATE TIME TABLES.

Preparatory Department.

	9—9·55.	10—10·50.	11—11·50.	11·50—12·15.	INTERVAL.	1·15—2·5.	2·10—3.	3- 4.
M. ...	Arithmetic.	Drawing.	English.	Drill.		English.	Workshop.	Latin or French.
Tu. ...	,,	Writing.	,,	Singing.		,,	Recit., &c.	,,
W. ...	,,	Drawing.	,,	Drill.		,,	Workshop.	,,
Th. ...	,,	Writing.	,,	Singing.		,,	Recit., &c.	,,
F.....	,,	Drawing.	,,	Drill.		,,	Writing.	,,

Secondary Department.

Class I.

	9—9·55.	10—10·50.	11—11·50.	11·50—12·15.	INTERVAL.	1·15—2·5.	2·10—3.	3—4.
M. ..	Arithmetic.	Drawing.	English.	Drill.		English.	Workshop.	Latin or French.
Tu. ...	,,	Science.	,,	Singing.		,,	Writing.	,,
W. ...	,,	Drawing.	,,	Drill.		,,	Workshop.	,,
Th. ...	,,	Science.	,,	Singing.		,,	Writing.	,,
F.....	,,	Drawing.	,,	Drill.		,,	Geometry.	,,

Class II.

	9—9·55.	10—10·50.	11—11·50.	11·55—12·45.	INTERVAL.	1·15—2·5.	2·10—3.	3—4.
M. ...	English.	Arithmetic.	Physics.	Physics.		Drawing.	Geom. Draw.	Latin, French, or German.
Tu. ...	,,	Mathematics.	Drawing.	Chemistry.		Arithmetic.	Physics.	,,
W. ..	,,	Arithmetic.	Workshop.	Workshop.		Mathematics.	Geom. Draw.	,,
Th. ...	,,	Mathematics.	Drawing.	Physics.		Chemistry.	Drill.	,,
F.....	,,	Arithmetic.	Chemistry.	Chemistry.		Mathematics.	Geom. Draw.	,,

Class III.

	9—9·55.	10—10·50.	11—11·50.	11·55—12·45.	INTERVAL.	1·15—2·5.	2·10—3.	3—4.
M. ...	English or Latin.	Mathematics.	Mechanics.	Drawing.		Chemistry.	Chemistry.	Latin, French, or German.
Tu. ...	,,	,,	,,	Chemistry.		Drill.	Geom. Draw.	,,
W. ...	,,	,,	Geom., Draw.	Drawing.		Chemistry.	Chemistry.	,,
Th. ...	,,	,,	Physics.	Physics.		Mechanics.	Geom. Draw.	,,
F.....	,,	,,	,,	,,		Workshop.	Workshop.	,,

Class IV.

	9—9·55.	10—10·50.	11—11·50.	11·55—12·45.	INTERVAL.	1·15—2·5.	2·10—3.	3—4.
M. ...	English or Latin.	Mathematics.	Machine Construction.	Solid Geometry.		Mechanics.	Drill.	Latin, French, or German.
Tu. ...	,,	,,	,,	Drawing.		Mathematics.	Workshop.	,,
W. ...	,,	,,	Solid Geometry.	Mathematics.		Chemistry.	Chemistry.	,,
Th. ...	,,	,,	,,	Drawing.		Physics.	Physics.	,,
F.....	Mechanics.	,,	Chemistry.	Chemistry.		Workshop.	Workshop.	,,

Class V.

1. Mechanical and Electrical Engineering Section.

	9—9·55.	10—10·50.	11—11·50.	11·55—12·45.	INTERVAL.	1·15—2·5.	2·10—3.	3—4.
M. ...	English or Latin.	Solid Geometry.	Physics.	Physics.		Mathematics.	Mechanics.	Latin, French, or German
Tu. ...	,,	,,	Workshop.	Workshop.		,,	Drawing.	,,
W. ...	,,	,,	Machine Construction.	Machine Construction.		Physics.	Physics.	,,
Th. ...	,,	Mechanics.	Steam.	Mathematics.		Mathematics.	Drawing.	,,
F.....	Workshop.	Workshop.	,,	,,		,,	Drill.	,,

2. Chemical Section.

	9—9·55.	10—10·50.	11—11·50.	11·55—12·45.	INTERVAL.	1·15—2·5.	2·10—3.	3—4.
M. ...	English or Latin.	Chem., theo. (organic).	Physics.	Physics.		Mathematics.	Mechanics.	Latin, French, or German.
Tu. ...	,,	,,	Chem , prac. (inorganic).	Chem., prac. (inorganic).		,,	Drawing.	,,
W. ...	,,	,,	,,	,,		Chem., prac. (organic).	Chem., prac. (organic).	,,
Th. ...	,,	Mechanics.	Steam.	Mathematics.		Mathematics.	Drawing.	,,
F.....	Chemistry.	Chemistry.	,,	,,		,,	Drill.	,,

ROYAL HIGH SCHOOL, EDINBURGH, SCOTLAND.

GRAND HALL, HIGH SCHOOL, EDINBURGH.

THE LIBRARY, HIGH SCHOOL, EDINBURGH.

SWIMMING BATH AND GYMNASIUM, HIGH SCHOOL, EDINBURGH.

DRAWING CLASS-ROOM, HIGH SCHOOL, EDINBURGH.

WORKSHOP HIGH SCHOOL, EDINBURGH.

LABORATORY, HIGH SCHOOL, EDINBURGH.

GEORGE WATSON'S COLLEGE FOR BOYS, EDINBURGH, SCOTLAND.

GEORGE HERIOT'S SCHOOL, EDINBURGH, SCOTLAND.

THE HIGH SCHOOL, GLASGOW, SCOTLAND.

WADLEIGH HIGH SCHOOL FOR GIRLS, NEW YORK CITY U.S.A.

CHAPTER VIII.

Secondary Education in America.

[J. W. TURNER.]

Introduction.—Secondary education in America commences with the completion of an eight years' course (four in the elementary school and four in the grammar school) at about the age of 14, but there is a movement in some of the States to provide for the earlier introduction of secondary school subjects.

Organisation.—The school buildings of America set apart for secondary education have been designed to include all the newest ideas of school construction.

New York schools.—The High School for Girls in 114th street, New York, has an enrolment of upwards of 2,000 pupils. The class-rooms, study-rooms, lecture-rooms, are of the latest design; the floor of the general assembly hall, which holds 1,000 pupils, is on a slightly inclined plane, and the room is magnificently furnished; the desks, which are made in the State prison, are single; the basement is set apart as a luncheon room, under the control of a caterer; laboratories for physics and chemistry exist; two well-furnished gymnasiums, in which each girl gets two hours' practice each week in Swedish drill, under trained female gymnasts, form part of the school's organisation; wide airy corridors give ample opportunity for a break at the change of lessons; wide staircases lead to the various rooms, which occupy three stories; and the lavatories, &c., are supplied with the latest ideas in marble fittings. (*Vide* print.)

High School, Springfield, Massachusetts.

The following description of this magnificent high school has been obtained from a monograph, entitled, "A modern house of learning":—

The building is situated in the heart of the choicest section of the city, and its architecture is that of the Italian Renaissance. The interior walls of brick are strengthened by steel framework from foundation to roof, which, with iron stairways and "slow-burning" construction, provides a building practically fireproof. The triple-arched main entrance leads to a spacious vestibule, ornate and elegant, which is floored with marble mosaic and wainscoted with Italian marble. Amply-lighted corridors, 11 feet in width, traverse the building on every floor, leading to study rooms, recitation rooms, and other apartments, each of which is so located as to secure direct sunlight during the morning hours. The gas and electric fixtures were manufactured from special designs, selected for excellence of artistic merit, in competition in which the leading manufacturers of the country participated. In the office of the principal hangs the programme clock, a regulator electrically connected with and synchronising the forty-three clocks in the several apartments of the building.

The assembly hall, which is used by the general public as well as for school purposes, is lighted through ceiling panels of opal, leaded glass, and through windows on two sides. The seating capacity of the hall is 800. The sanitaries are equipped with the most scientific of ventilated furnishings. Their granolithic floors, marble partitions, dados, lavatory, and nickel-plated metal work suggest a cleanliness that cannot but afford satisfaction to the most fastidious. Marble drink-water fountains are adjacent to stair-wells on every floor, while sinks of porcelain-ware, or soapstone, are provided wherever required.

The luncheon-room is situated in the basement. Boys and girls have separate departments, which are provided with storage racks for bicycles, recreation room, and general sanitaries.

Four horizontal tubular boilers, each 66 inches in diameter, and of 125 horse-power capacity, supply steam that is rapidly circulated through miles of piping by vacuum pressure. Three primary heaters, each containing over 1,000 square feet of radiation, have their intake from a reservoir that receives its supply of fresh air from above the ridges of surrounding roofs. The air, drawn through these primaries by three 7-foot fans, and at a temperature of 70 degrees, is forced into a plenum chamber that traverses the entire length of the three sections of the buildings. The ventilation is accomplished by means of four exhaust fans, 4 feet in diameter. These fans draw the vitiated air from each apartment separately. The total cost of the structure is 400,000 dollars (£80,000). The city of Springfield, which has a population under 100,000, supports, in addition to the high school just described, a very flourishing manual training high school. (*Vide* print.)

The Detroit High School.

The city of Detroit, Michigan Co., which has a population of 286,000 (1900), has three high schools, thoroughly equipped and fully staffed. The Central High School in this city was visited while in operation, and the following information as to its organisation was courteously supplied by the principal, who also was good enough to procure for the Commissioner the most recent reports of the school's progress. The high schools of America include the last four years of the public school course. From 6 to 10 the American pupil is in the elementary school, graded I to IV; from 10 to 14 in the grammar school, graded V to VIII; and from 14 to 18 he may attend the high school. Education in all three cycles is free. The high schools are designed to give a good general education to those whose formal training must end with the public schools. The 1902 report of the Central High School, Detroit, states that it also serves as a preparatory school for the City Normal Training School; at the same time, it forms a part of the secondary stage of the educational system of the State. Its courses of study, accordingly, prepare students for admission to the University of Michigan and other leading colleges. The school year is divided into two terms of twenty weeks each. The summer vacation lasts throughout the months of July and August. The organisation

organisation of the school is on the plan of two promotions annually, and the pupils are classified under four grades, known as IX, X, XI, and XII, each having two sections. In reality, there are eight grades of twenty weeks each. The four grades form, practically, four departments, each in its own assembly room, under the direction of its grade principal. The school is carried out on the co-educational principle, and the attendance is 1,700.

Staff.—The staff of the school is as follows :—

A Principal—Male teacher (general supervision).
Principal of XIIth grade—Female teacher, who takes Algebra and Trigonometry.
Principal of XIth grade—Female teacher, Head of Department of History.
Principal of Xth grade ... Female teacher.
Principal of IXth grade ... Female teacher.
Head of Department of Science (Physics) ... Male teacher.
Head of Department of Chemistry ... ... Male teacher.
Head of Department of German ... ... Male teacher.
Head of Department of Classics (Greek and Latin) ... ... Male teacher.
Head of Department of French ... ... Male teacher.
Head of Department of Biology ... ... Male teacher.
Head of Commercial Department (Bookkeeping, Commercial Law, Economics) ... ... Male teacher.
Geometry ... ... Female teacher.
Geometry ... ... Female teacher.
Geometry ... ... Female teacher.
Geometry ... ... Male teacher.
History ... ... Female teacher.
History ... ... Female teacher.
History ... ... Female teacher.
History ... ... Female teacher.
History ... ... Male teacher.
History ... ... Female teacher.
Geography ... ... Female teacher.
Rhetoric ... ... Female teacher.
Rhetoric ... ... Female teacher.
Rhetoric ... ... Female teacher.
Rhetoric ... ... Female teacher.
Rhetoric ... ... Female teacher.
Literature and Rhetoric ... Female teacher.
English and Rhetoric ... Female teacher.
English and Rhetoric ... Female teacher.
Rhetoric and History ... Female teacher.
Rhetoric and History ... Female teacher.
German and History ... Female teacher.
Latin and History ... Female teacher.
Latin and History ... Female teacher.
Latin and Greek ... ... Male teacher.
Latin ... ... Female teacher.
Latin ... ... Male teacher.
Latin ... ... Male teacher.
Latin ... ... Female teacher.
Latin and French ... Female teacher.
Algebra ... ... Female teacher.
Algebra ... ... Female teacher.
Algebra ... ... Female teacher.
Algebra and Chemistry ... Male teacher.
Algebra and Chemistry ... Female teacher.
Algebra and Geometry ... Male teacher.
Algebra and Latin ... Male teacher.
Physics ... ... Male teacher.
Physics ... ... Male teacher.
Botany, Zoology ... ... Female teacher.
Botany ... ... Female teacher.
German ... ... Female teacher.
German and French ... Male teacher.
French ... ... Female teacher.
Phonography ... ... Female teacher.
Book-keeping ... ... Male teacher.
Drawing ... ... Male teacher.
Drawing ... ... Female teacher.
English ... ... Female teacher.
Secretary ... ... Female.
Librarian ... ... Female.
Clerk and Assistant Librarian ... ... Female

Admission to the School.—Examinations are regularly held among pupils of the VIIIth grade in the public grammar schools by the Superintendent of Schools for the city, and promotions are made at the commencement of the half-yearly courses. Applicants from other schools are required to pass a test in English, United States history, arithmetic, and spelling.

Admission to College.—Those students who complete the high school course, and make up the required number of hours in the elective studies, may at graduation receive a certificate recommending them for admission to the University of Michigan and other colleges without further examination. Fifteen units are required for admission to the University of Michigan. A unit means one subject, pursued for not less than four periods a week throughout a school year. The following subjects are compulsory :—

English	3 units.
Mathematics (algebra and geometry)	3 units.
Physics	1 unit.
Latin, French, *or* German	2 units.

The balance, 6 units, must be made up from the following, the figures annexed indicating the values in each case :—

Greek	2	Chemistry	1
Latin	2 or 4	Botany	1
French	2 or 4	Zoology	1
German	2 or 4	Physiography	1
English literature	1	History	1, 2, or 3

Students expecting to enter Harvard College, Yale College, or Princeton, are recommended to take the classical course.

Girls expecting to enter Vassar, Wellesley, Smith, or Bryn Mawr Colleges, are advised to take the classical or the Latin course.

All of these institutions require at least four years' work in Latin for admission, and the first three require Greek, although Harvard will permit certain substitutes for it.

The Buildings.—It would be a difficult matter to decide whether the high schools of Germany or America are the better as regards material organisation. In each country the site is frequently well chosen, the architecture, while plain, is solid and imposing, the internal organisation has all the modern finish

finish. In Germany one is impressed with the class-rooms, the laboratories and lecture halls, the museums of natural history, the magnificent libraries, and the gymnastic halls. In America the grade-rooms are spacious school-rooms, the class-rooms are large and cheerful, the laboratories and lecture halls are well furnished, the equipment for the teaching of biology is good, the libraries are well managed, and the gymnasiums are very superior.

The Detroit High School, erected in 1897, is one of the finest types of school buildings to be seen in America. The following description of the building is obtained from a monograph published at the dedication of the building:—The entire cost of the building, including site and fittings, was about £120,000. It is built in the form of the letter T. It is plain in style, little money having been spent in mere display. It is substantially built of brick and stone, and is as nearly fireproof as it could be made. The framework for floors and roof is of steel. The floors are laid in cement over hollow tiles. The roof is of red tile, and aside from wainscoting, doors, and furniture, there is practically nothing combustible in the building. There are three stories, beside the basement, which is entirely above the original level of the ground. Two elevators, capable of carrying thirty pupils each, afford ready communication between the different floors.

Within, a corridor on each floor retains the T form of the building. These corridors are about 260 feet long, from north to south, and 110 feet from east to west. The main halls are 24 feet wide, and for some distance at the middle of the building they are about 40 feet wide. One has only to see them at recess, or at a change of classes, to appreciate their practical value in the school. The corridors are abundantly lighted and are very attractive.

The work of the ninth grade, the first year of the high school, is mostly confined to the third floor. It contains an assembly hall or study-room, seating 320 students, fifteen recitation (class) rooms, besides coat-rooms and toilet-rooms, and the beautiful auditorium, which will seat nearly 2,000 persons.

The second floor is the home of the tenth grade and the seat of administration. It contains the assembly room, the principal's offices, the library, the reading-room, the zoology laboratory, the botany laboratory, eleven recitation rooms, and several coat-rooms and toilet-rooms for the use of the pupils.

On the first floor are the assembly rooms of the eleventh and twelfth grades. It contains a physics lecture-room, apparatus room, fifteen recitation rooms, including the large book-keeping room fitted up as an office, and four coat-rooms and toilet-rooms.

The basement rooms are as pleasant and well lighted as any in the building. They include two laboratories for physics, with a commodious dark-room and a workshop, chemistry lecture-room, chemistry store-room and private laboratory, and the chemistry laboratory. In the basement, also, are the engine and blower-rooms, the boiler-house with its bank of four large boilers, two steam-engines, three enormous fans, two dynamos, steam-pumps, elevator machinery, air compressor, and other machinery.

The local School Committee consider that in conveniences for work, and in adaptability of means to an end, this building is superior to most schools. The building is heated by air forced to all parts by fans. Automatic heat regulators govern dampers that furnish to each room hot or cold air, as its temperature may demand. Every room is lighted by electricity furnished by dynamos within the building.

Every laboratory is equipped with needed conveniences for work, and each student doing laboratory work has his own locker with combination lock. Nearly all the rooms are in communication with one another by telephone. The corridors and assembly rooms all have clocks, which, with the tower dial clock, are governed electrically by a regulator clock in the library. This same master clock also governs the programme instrument. (*Vide print.*)

The Girls' High School, San Francisco.

The Girls' High School, San Francisco, is a two-story building, with splendid class-rooms, good scientific laboratories, and a spacious auditorium. In common with other high schools in America, the general equipment, lighting, and ventilation, are of modern design. The attendance is 600, and the staff numbers 20, of whom 16 are female teachers.

The course of study, the prospectus sets forth, is designed to give as broad general culture as the time devoted to secondary instruction will allow—the requirements for entrance to the universities being taken as the minimum in each department. Graduates receiving the recommendation of the Faculty of the School are admitted without examination to the University of California, Stanford University, Chicago University, State Normal Schools, Wellesley College, and Vassar College.

Eighty units are required for graduation, of which forty are obligatory and forty elective, as laid down in Table I. In selecting their course of electives, pupils may make choice of any group as laid down in Table II. A unit represents one lesson a week for one year.

Table I.

Subjects.	Units required.	Units elective.	Units possible.
English	13	7	20
History	10	5–5	20
Mathematics	10	5	15
Science	5	5–5–5	20
Drawing	2	3–3	8
Latin	...	10–5–5	20
Greek	...	10–5	15
French	...	10–5	15
German	...	10–5	15
	40	40	80

Table II.

Subjects.	Group 1. Classical Course.	Group 2. Modern Language Course.	Group 3. English Scientific Course.
English	20 or 15	20 or 18	20
Mathematics	10	12 or 15	15 or 10
History	10 or 15	15	20 or 15
Science	10	10 or 20	20 or 15
Latin	20	10 or 15	5 or 10
Greek	10 or 15	...	...
French or German	...	10 or 15	...
Drawing	2	2 or 5	5 or 8
	80	80	80

Group

Group 1, the Classical course, prepares for the College of Letters; Group 2, the Modern Languages Course, prepares for the Colleges of Social Sciences, Natural Sciences, and Commerce in the University of California; Group 3, the English Scientific Course, admits to the Colleges of Agriculture, Chemistry, Mechanics, Mining and Civil Engineering. Any one of the three courses will admit to the Normal School.

The following is the course of study and syllabus of New York High Schools—seventeen in number:—

COURSE OF STUDY FOR ALL HIGH SCHOOLS (EXCEPT MANUAL TRAINING AND COMMERCIAL HIGH SCHOOLS), DEPARTMENT OF EDUCATION, THE CITY OF NEW YORK.

Borough of Manhattan.—De Witt Clinton High School, Wadleigh High School, Girls' Technical High School.

Borough of the Bronx.—The Morris High School.

Borough of Brooklyn.—Boys' High School, Girls' High School, Eastern District High School, Erasmus Hall High School.

Borough of Queens.—Long Island City High School, Woodside High School, Newtown High School, Flushing High School, Far Rockaway High School, Jamaica High School, Richmond Hill High School.

Borough of Richmond.—Stapleton High School, Port Richmond High School.

FIRST YEAR.

Required.	Periods.
English	5
Latin or German or French	5
Algebra	5
Biology, including Physiology, Botany and Zoology, in different parts of the year	5
	20

SECOND YEAR.

Required.	Periods.
English	3
Latin or German or French	5
Plane Geometry	4
Greek and Roman History	3
	15

Electives.	
Greek	5
German	5
French	5
Spanish	5
Chemistry	5

THIRD YEAR.

Required.	Periods.
English	3
Latin or German or French	5
English History	2
Physics*	5
Geometry and Algebra (second course)†	3
	18

THIRD YEAR—*continued.*

Electives.	
Greek	4
German	4
French	4
Spanish	4
Stenography and Typewriting	4
Book-keeping	3
Economics	3
Botany or Zoology	4

FOURTH YEAR.

Required.	Periods.
English	3
A foreign language	4
Chemistry or Physiography or Biology‡	4
English and American History and Civics	4

Electives.	
Physics, as in third year	5
Greek	4
Latin	4
German	4
French	4
Spanish	4
Mathematics	4
Stenography and Typewriting	3
Economics	3
Domestic Science (sewing, cooking, and household economy)	3
Commercial Law and Commercial Geography	3
Additional Latin or Greek or English	3
Mediæval and Modern History	3

* A student preparing for college, who has already taken two foreign languages, may substitute a third foreign language for science specified. At least one period a week of Physics shall be devoted to unprepared work.

† Book-keeping may be substituted for Geometry and Algebra.

‡ A student preparing for college, who has already taken two foreign languages, may substitute a third foreign language for science specified.

GENERAL PROVISIONS.

1. A period shall not exceed fifty minutes.

2. Drawing and art study shall be required two periods per week and vocal music one period per week throughout the first two years. Drawing and art study shall be optional one period a week throughout the third and fourth years. Those who intend to enter a training school should take this course throughout the third and fourth years.

3. The equivalent of two periods per week shall be devoted to physical training throughout the course.

4. Drawing and art study, physical training and vocal music shall not be considered as subjects requiring preparation.

5. Of subjects requiring preparation, no student shall be required to take more than twenty-one periods per week.

6. No new class in an elective subject need be formed in the second year for less than 25 pupils; in the third year for less than 20 pupils; in the fourth year for less than 15 pupils.

7. Exercises in voice training and declamation shall be given at least once a week during the first year, and may be continued throughout the course.

8. In order to graduate from a high school a student must have studied at least one foreign language for at least three years, have accomplished satisfactorily all the other required work, and have taken a sufficient number of elective studies so that the total amount required and elective studies shall equal 3,000 periods of work requiring preparation, and shall extend over not less than three years and not more than six years. Due credit shall be given by the principal of a high school for work done by a pupil in other high schools.

9. After July 31, 1902, a student's proficiency in each subject presented for graduation, shall be determined, in accordance with rules to be prescribed by the Board of Superintendents, by the examination conducted by the College Entrance Examination Board. A diploma of graduation shall be issued to each student who successfully passes this examination and who complies with the foregoing conditions. A certificate of having successfully completed the course of study for high schools shall be issued to each student who has complied with the foregoing conditions, but who does not take the above-mentioned examination.

SYLLABUS FOR HIGH SCHOOLS, DEPARTMENT OF EDUCATION, THE CITY OF NEW YORK.

ENGLISH.

(Literature, Composition, Grammar and Rhetoric.)

SYLLABUS IN ENGLISH.

THE major elements of the course of study in English are English literature, composition, and technical English.

English literature is to be understood as including the reading or study of separate texts, either as class work or as supplementary reading, together with the study of the history of English literature, incidentally throughout the course and, toward the end, in a somewhat more systematic manner.

The term composition includes oral composition and written composition. The former calls not only for more or less extended effort but for frequent drill in oral expression. The latter embraces all forms of written expression.

By technical English is meant what is usually classed as English grammar, or as rhetoric, or as both, together with some phases of the history of the English language.

The period devoted each week to voice training and declamation shall not be regarded as one of the periods prescribed for English in the course of study.

In

LIBRARY OF THE UNIVERSITY

In connection with the material in the syllabus, the following should be noted :—

Literature.—No books are prescribed other than those required by the College Entrance Examination Board. These books are a fixed requirement for each school in the exact order in which they stand for the class which is to graduate in 1906. Failure to maintain this order will result in confusion to pupils transferred from school to school. At the same time the degree of intensity with which these books shall be studied and the assignment of them for class work or for home reading are left to the option of each school. The suggestions as to special methods of study given under the head of Literature in the first year should be followed in all grades ; but particularly with reference to books designated for study and practice. Further suggestions will be found in the requirements of the College Entrance Examination Board.

In addition to the books prescribed there should be chosen others for class work and for supplementary reading. These books should in all cases illustrate some central principle of selection. They should, for example, reinforce appreciation of some author, or some literary type, period, or school, or should be chosen for their value in connection with some special phase of work in composition. Selections for this purpose should be made in part from the incomplete though suggestive list of books given on pages 18 and 19 of the July, 1899, report of the National Educational Association.

Beyond the work taken up in class, pupils should be called upon to do as much supplementary reading as time and local conditions will permit.

The reading and study of books should be understood to include not only an adequate knowledge of the chosen texts with reference both to content and to structure, but also to some extent a consideration of the literary epochs and types represented by these texts. Furthermore, the memorising of selections both of prose and of poetry, the study of verse forms and of figures of speech should, though of subordinate importance in the study of literature, receive attention.

Composition.—In addition to the kinds of composition definitely prescribed, pupils should have practice in note-taking and in writing stories, anecdotes, conversations, character sketches, abstracts, summaries, news items, and the like. A close study of progressively graded models of good composition should be made throughout the entire course. The pupils should be frequently required to correct their own compositions and to prepare outlines before writing.

Technical English (1).—Material has been grouped under this head merely for purposes of convenience. The aim has been to distinguish between the analytical aspects of composition and literature and the creative aspects. In some places certain special phases of technical English have been grouped under composition or literature, or under both.

(2). Instruction under this head must at all stages of school work bear a close relation to all other English work.

(3) As a preparation for the survey of the history of the English language, recommended in the eighth term, it is suggested that in connection with the work in literature there be given as much incidental instruction as possible in the history and geography of the English-speaking people, as far as these illustrate the development of the English language, in phonetics, word-composition, elements of the English vocabulary, and changes in the meanings of words. Much valuable instruction of this sort may be introduced in connection with the study of the works of Shakspere, Milton, Addison, and Burke.

Oral Expression.—In connection with all work in English, particularly in the first year, attention should be paid to connected oral expression. The teaching of oral expression shall be understood to include practice in extempore discourse, as well as drill in enunciation, pronunciation (with training in the use of diacritical marks of the dictionary), phrasing, and inflection.

FIRST YEAR.

First Half (Term I).

Literature.—Required : Scott's "Lady of the Lake ;" Coleridge's "The Ancient Mariner." Suggested : Narratives in both prose and verse, some brief, some of greater length, selected by the teacher from such authors as Scott, Hawthorne, Tennyson, Lowell, Whittier, Browning, Stevenson, and Kipling, and representing various qualities of style.

The following plan of study is suggested :—(1) Meaning of the author—(*a*) Outline of the story ; (*b*) incidents in the story ; (*c*) central idea and purpose of the story. (2). Method of the author—(*a*) Does the interest centre in the incidents and the scenes or in the characters ? (*b*) is there a climax ? (*c*) do all the parts converge to this point ? (unity) ; (*d*) are the parts arranged in sequence (coherence) ; (*e*) is the interest sustained ? how ? (3) Style of the author—(*a*) Character of vocabulary ; (*b*) meaning in detail of particular words and sentences ; (*c*) prevailing sentence forms ; (*d*) paragraph structure ; (*e*) use of embellishment.

Composition.—(1) Letter writing and short themes based on the experience of the pupil and on the literature of the term. Emphasis should be laid on narration and on the planning of compositions after the study of models ; (2) external form of the composition.

Technical English.—Review of the elements of English syntax. Emphasis on the sentence as the unit of thought. The inflection of pronouns and verbs. Incidental study of concord, punctuation, and capitalization. Elementary study of verse forms.

Second Half (Term II).

Literature.—Required : Scott's Ivanhoe, Lowell's The Vision of Sir Launfal. Suggested : Examples illustrative of various styles of descriptive literature, in both prose and verse, to be selected from such authors as Hawthorne, Lowell, Gray, Goldsmith, Poe, Blackmore, Burroughs, and Irving. Some of the books should be studied in class, others assigned for home reading. In some cases it is well to study in class portions of a work of considerable length and require that the remaining parts be read at home.

The same general plan of study as that suggested in the N. E. A. Report of July, 1899, should be followed. (1) Meaning of the author ; (2) method of the author ; (3) style of the author.

Composition.—Short themes based on the experience of the pupil and on the literature of the term. Emphasis should be laid on description. The subjects chosen for description should be individual rather than general. They should be such objects as the pupil has seen, or is able to reproduce from imagination.

Technical English.—Elementary study of unity, emphasis, and coherence in the whole composition, the paragraph, and the sentence.

SECOND YEAR.

First Half (Term III).

Literature.—Required : Irving's Life of Goldsmith, The Sir Roger de Coverley Papers.

Composition.—(1) Short themes of various types ; (2) emphasis should be laid on exposition. The aim should be to encourage logical thinking. The subjects chosen should be concrete, carefully limited, and within the pupil's experience. Practice should be given in definition and in the explanation of simple and familiar things. Due attention should be paid to the planning of compositions after the study of models, and to adherence to a plan in the writing.

Technical English.—Further study of paragraph structure, with respect to unity, coherence and emphasis, the use of the topic sentence and of connectives, and methods of transition.

Second Half (Term IV).

Literature.—Required : Macaulay's Essay on Addison ; Shakspere's The Merchant of Venice. Suggested : At some time during this or the preceding term each class should be given by its teacher a brief chronological outline, showing the main periods and some of the chief writers of English literature. This skeleton outline may be filled in as the course progresses. Some supplementary instruction may be given from time to time, in the discretion of the teacher.

Composition.—(1) Elementary exposition (continued). (2) Elementary argumentation. No question should be chosen that requires special preparation in the way of reading. Pupils should be given practice in framing propositions on topics of direct interest to them, in defining terms, and in differentiating introduction, proof, and conclusion. Emphasis should be laid on the distinction between assertion and proof. (3) Short themes of various types.

Technical English.—Study of the sentence from the point of view of rhetoric : long and short, periodic and loose, balanced, etc.

THIRD YEAR.

First Half (Term V).

Literature.—Required: Tennyson's Gareth and Lynette, Lancelot and Elaine, The Passing of Arthur; George Eliot's Silas Marner.

Composition.—Paragraphs and longer themes of miscellaneous types. The aim should be to develop general appreciation of structure and style. Subjects of composition should be drawn to a considerable extent from the literature studied. It is also well to draw upon the other subjects of the curriculum for suitable subjects, particularly history and science. Stories, episodes, conversations upon various topics, descriptions of scenes, character sketches, are good topics. Outlines of compositions should be prepared by the students.

Technical English.—Review of fundamental rhetorical principles with special study of diction.

Second Half (Term VI).

Literature.—Required: Milton's L'Allegro, Il Penseroso, Comus, and Lycidas; Shakspere's Macbeth.

Composition.—(1) Short themes of various types. (2) Exposition: Themes of some length carefully developed through preliminary outlines and embodying different types of exposition. Such work should show a considerable advance in complexity over that required in Term III.

Technical English.—Further study of the structure of the whole composition. Criticism of outlines, analysis of models, &c. Incidental study of the qualities of style. Further study of verse forms.

FOURTH YEAR.

First Half (Term VII).

Literature.—Required: Macaulay's Life of Johnson. Burke's Speech on Conciliation with America.

Composition: (1) Short themes of various types. (2) At least one argument of considerable length developed through formal introduction and brief. Such work should show a considerable advance in complexity over that required in term IV. (3) Paragraphs illustrative of elements in argumentation, *e.g.*, an appeal to the interests of an audience, clear statement of a question, practice in the various methods of developing proof, summaries of proof, etc., all supplementary to the formal argument.

Technical English.—Incidental instruction in such phases as need special emphasis.

Second Half (Term VIII).

Literature.—Required: Shakspere's Julius Cæsar. A survey of the history of the English language and literature, together with a review of the books for "study and practice."

Composition.—(1) Abstracts, summaries, reports on special investigations, &c., all carried on in connection with the work in literature. (2) Optional: At the end of the course in English, each student may be required to submit a final theme of considerable length to illustrate as fully as possible his power of expression.

Technical English.—Incidental instruction in such phases as need special emphasis.

ELECTIVE COURSE IN ENGLISH.

FOURTH YEAR.

First Half (Term VII).

Literature.—Suggested: A study of Elizabethan literature correlative with the study of Macbeth: Spenser and the dramatists; reading from lyrics and prose.

Composition.—Themes and other exercises of various sorts adapted to the literature read and to the needs of the class.

Second Half (Term VIII).

Literature.—Suggested: A study of the literature of the nineteenth century, including the essay, poetry, and fiction, and giving some prominence to the literature of this period in America.

Composition.—Themes and other exercises of various sorts adapted to the literature read and to the needs of the class.

LIST OF BOOKS FOR SUPPLEMENTARY READING RECOMMENDED BY THE NATIONAL EDUCATIONAL ASSOCIATION.

FIRST YEAR.

1	Snow Bound	Whittier
2	Tales of Shakspere	Lamb
3	Wonder Book	Hawthorne
4	Tanglewood Tales	Hawthorne
5	Jungle Book No. 1	Kipling
6	Jungle Book No. 2	Kipling
7	Betty Alden	Austen
8	Sharp Eyes	Burroughs
9	Autobiography of Franklin	Franklin
10	Tom Brown at Rugby	Hughes
11	Story of a Bad Boy	Aldrich
12	Nicholas Nickleby	Dickens
13	Two Years before the Mast	Dana
14	Bunker Hill Speeches	Webster
15	Sketch Book	Irving
16	Washington's Rules of Conduct, Farewell Address, and Lincoln's Inaugural and Gettysburg Speech.	
17	Man Without a Country	Hale
18	Hans Brinker	Dodge
19	Ivanhoe	Scott
20	Quentin Durward	Scott
21	Tales of a Wayside Inn	Longfellow
22	The Story of the Indian	Grinnell
23	Tales of New England	Jewett
24	Being a Boy	Warner
25	Merchant of Venice	Shakspere
26	The Choir Invisible	Allen
27	Life of Washington	Irving-Fiske
28	Cuore	D'Amicis
29	Back of the North Wind	McDonald
30	Macaulay's or Chesterfield's Letters.	

SECOND YEAR.

1	Vision of Sir Launfal	Lowell
2	Lady of the Lake	Scott
3	Marmion	Scott
4	Lyrics and Sonnets ("Cry of the Children")	Mrs. Browning
5	The Lake Poets, Wordsworth, Coleridge, Southey	
6	Julius Cæsar	Shakspere
7	Translations from the Iliad (Books I, VI, XXII, XXIV)	Pope
8	Last of the Mohicans	Cooper
9	Tales of a Traveller	Irving
10	The War of Independence	Fiske
11	Young Folk's Plutarch	Kaufmann
12	Apology of Socrates	Plato
13	Back Log Studies	Warner
14	Brave Little Holland	Griffis
15	Julius Cæsar	Froude
16	Little People of Asia	Olive T. Miller
17	Bulfinch's Mythology	Hale
18	Twice Told Tales	Hawthorne
19	John Halifax	Muloch
20	Kenilworth	Scott
21	Tale of Two Cities	Dickens
22	Rab and His Friends	Dr. John Brown
23	The Private Life of the Romans	Preston and Dodge
24	Hero Tales from American History	Roosevelt and Lodge
25	Girls and Women	Chester
26	Shakspere the Boy	Rolfe
28	Rudder Grange Stories	Stockton
29	The Hoosier Schoolmaster	Eggleston
30	Ranch Life and the Hunting Trail	Roosevelt

THIRD

THIRD YEAR.

1	Richard II	Shakspere
2	Twelfth Night	Shakspere
3	Macbeth	Shakspere
4	Legends of the Alhambra	Irving
5	Silas Marner	Eliot
6	Critical Essays	Lowell and Matthew Arnold
7	Lectures and Speeches	Wendell Phillips
8	Wulf the Saxon	C. A. Henty
9	Political Ideas	Fiske
10	The Young Carthaginian	Henty
11	The Roman and the Teuton	Kingsley
12	Minor Poems	Milton
13	Vicar of Wakefield	Goldsmith
14	Essay on Friendship	Emerson
15	Kidnapped	Stevenson
16	Our Old Home	Hawthorne
17	Prophet of Great Smoky Mountain	Craddock
18	Dombey and Son	Dickens
19	John Brent	Winthrop
20	Lorna Doone	Blackmore
21	Paradise Lost (Books I, II)	Milton
23	Prue and I	Curtis
24	The Newcomes	Thackeray
25	Autocrat of the Breakfast Table	Holmes
26	Uarda	Ebers
27	Lord Clive	Macaulay
28	Ben Hur	Wallace
29	Palamon and Arcite	Dryden
30	Roman Life in the Days of Cicero	Church

FOURTH YEAR.

1	Hamlet	Shakspere
2	Sir Roger de Coverley Papers in the Spectator	Addison
3	Critical Period of American History	Fiske
4	American Commonwealth (abridged)	Bryce
5	Essays on Burns (and Poems)	Carlyle
6	Nineteenth Century	Mackenzie
7	Life of Charlotte Brontë	Gaskell
8	Abraham Lincoln	Schurz
9	How the Other Half Lives	Riis
10	Judith Shakespeare	Black
11	Egyptian Princess	Ebers
12	The Destiny of Man	Fiske
13	Warren Hastings	Macaulay
14	Henry Esmond	Thackeray
15	Princess	Tennyson
16	Pride and Prejudice	Austen
17	Marble Faun	Hawthorne
18	David Copperfield	Dickens
20	Rime of the Ancient Mariner	Coleridge
21	Shakspere's England	Winter
22	Sesame and Lilies	Ruskin
23	On Style (Part I)	Spencer
24	Speech on Conciliation with America	Burke
25	Conduct of Life	Emerson
26	Milton and Addison	Macaulay
27	Walden	Thoreau
28	My Summer in a Garden	Warner
29	Essay on Manners	Emerson
30	Romola	Eliot

DEPARTMENT OF EDUCATION, THE CITY OF NEW YORK—SYLLABUS FOR HIGH SCHOOLS.

History.

1. Greek and Roman—Second Year. 2. Mediæval and Modern—Fourth Year, elective. 3. English—Third Year 4. American History and Civics—Fourth Year. 5. Economics—Fourth Year, elective.

Syllabus in History.

GENERAL STATEMENT.

In each branch of history studied a general outline of the work is presented, and certain topics are mentioned which should be emphasised. A list of these topics is given as a general guide to teachers.

SUGGESTIONS ON METHOD.

1. A genetic treatment of history being desirable, whatever method may be employed in teaching it, the unity of the human race should be kept steadily in view. The acquisition of facts is mainly a memory exercise. The real value of history lies in the appreciation it gives of mankind as a whole and of the advance of civilisation. All teaching should enable the student to draw conclusions from facts, considering such facts as means and not as ends. The study of natural conditions, of religion, art, government, and social relations, should be emphasised, because it furnishes the key to the history and destiny of a people. Study of this kind will always be feasible. The lessons should include a close observation of the physical features of the country.

2. Map drawing, collateral reading, written parallels between great characters, digests of reports, and outlines of daily lessons, are valuable exercises.

3. As history centres in great characters, a careful study of the biography of each period is important. This practice is especially desirable in the pursuit of English and American history. All collateral reading should be carefully supervised. The study of historic personages should be intensive rather than unduly extensive; that of literary characters should include the critical reading of well-chosen extracts from their works. Interest can be heightened by examination of original documents, and by visits to places of historic interest.

4. It is difficult to over-estimate the value of class debates in developing discrimination in the pupil, broadening his historical horizon, and giving him accurate knowledge of the points at issue. He should also become familiar with the meaning of such historical phrases as are to be met with in the best literature—*e.g.*, a victory of Pyrrhus; all roads lead to Rome; scratch a Russian and you find a Tartar; an oracular saying, &c.

5. Questions should be so prepared as to exercise the reason of the pupil more than his memory. To quote from the report of the Committee of Seven.—"The information questions should not demand the simple reproduction of the statement of the text, but should in large measure be framed so as to require the grouping of facts in a different form from that followed in the books recommended for preparation. There should also be questions involving some power of discrimination, and some use of legitimate comparison on the part of the candidate."

The more important dates should be thoroughly memorized.

Outline of the Course in History.

SECOND YEAR.

First Half (Term III).

A. The Oriental Peoples.—A brief survey, with especial reference to their contributions to civilisation. (Egypt, Chaldæa, Assyria, Babylonia, Media and Persia, Phœnicia, the Hebrews, India, China.)

B. Greek History.—1. The prehistoric period (the tribal, Mycenæan and the Homeric periods). 2. Gradual democratisation of Greece, through—*a*. Development of city states. *b*. Legislation. *c*. The federative influence of the Persian invasion. 3. Period of the Athenian supremacy.—*a*. Its foundation in the Confederacy of Delos. *b*. Achievements during the age of Pericles. *c*. Destruction in the Peloponnesian War. 4. The ripening of the Greek intellect and the decline of the city-state. 5. Growth and spread of the Macedonian power, 6. Partition of the empire of Alexander. 7. Failure of democratic institutions.

Second Half (Term IV.)

C. Roman History to 814 A.D.—

I. Traditional period.—1. The Roman city-state. 2. The fusion of early peoples. 3. Society, religion, and patriarchal government.

II. The Republic.—1. Constitutional changes. 2. The struggle for empire in the Mediterranean Basin. *a*. The Provincial system. 3. The effect of the Roman supremacy upon the Republic.—*a*. Changes in industry. *b*. Changes in society. *c*. Attempts at reform. *d*. Personal leadership. *e*. The civil wars.

III. The Roman World-state.—1 Centralisation of law and authority. 2. Territorial expansion. 3. Establishment of Christianity and rise of the Papacy. 4. Breaking apart of East and West. 5. The Decline of the Empire as influenced by—*a*. Economic causes—*e.g.*, slavery, excessive taxation, decrease of population. *b*. Social causes—such as moral deterioration, &c. *c*. Political causes—such as the progressive drafting of the barbarians into Roman service.

IV. Fall of the Western Empire and Establishment of the Germanic Empire.—1. The Germanic kingdoms and their fusion with Latin civilisation. 2. Transition to the early mediæval period among the Franks. 3. Establishment, growth and influence of monasticism. 4. Rise, spread and civilisation of Mohammedanism. 5. Revival of the empire by Charlemagne.

English History.

English history is required throughout the third year, two periods per week. The accession of James I. should be the dividing line between the work of the first and the second half years. A plan of the work should include the following:—

THIRD YEAR.

First Half (Term V).

I. Early England.—1. Prehistoric Britain. 2. Roman occupation. 3. Race elements of the English people: A. Kelts; B. Anglo-Saxons. C. Danes. D. Normans.

II.—Feudal England.—1. Foreign rule: A. The monarchy feudalized. B. Predominance of the Crown. C. The relation of church and state. 2. England's connection with the Crusades. 3. Guilds, towns, and mediæval life. 4. Constitutional progress: A. The beginning of England's judicial institutions. B. The struggle for the Charter. C. The rise of the Commons. 5. Territorial wars. 6. Dynastic wars and the decay of feudalism. 7. Humanistic and social movements.

III. Modern England.—

1. Tudor Period:
   - A. Personal monarchy of the Tudors.
   - B. The English Reformation.
   - C. England's relation to the religious wars on the Continent.
   - D. Exploration and colonial enterprise.
   - E. Industrial, commercial, and social progress.
   - F. Literary activity.

Second Half (Term VI).

Modern England (continued)—

2. Stuart period:
   - A. The Puritan Revolution. *a*. The King versus Parliament. *b*. The personal government of the first two Stuarts. *c*. The religious question. *d*. The foreign policy of the nation and of the monarch. *e*. The causes of the various migrations to the New world.
   - B. The supremacy of Parliament. *a*. Legislation limiting the royal perogative. *b*. The fall of the monarchy. *c*. The period of military rule. *d*. The beginning of maritime ascendancy. *e*. Steps towards religious toleration.
   - C. The Restoration and the Revolution. *a*. Settlement of church and of government upon restoration of the Stuart House. *b*. Commercial rivalry with Holland, and its connection with the ambitions of Louis XIV. *c*. The effort to establish Catholicism. *d*. The Revolution of 1688. *e*. The Revolution settlement.
3. Hanoverian period:
   - A. The rise of political parties and party government. *a*. Rise of the cabinet system of government. *b*. Absolutism of George III. and its effects in England and in America. *c*. Political reaction consequent upon the French Revolution. *d*. Reform legislation.
   - B. Colonial Expansion; the development of the Empire. *a*. The duel between England and France. *b*. The change in English methods of colonial government. *c*. The growth of England's power in Australia, Asia, and Africa.
   - C. The Industrial Revolution. *a*. The age of machinery. *b*. The growing importance of the labour question. *c*. The drift of activity from agriculture to manufacturing.
   - D. Growth of philanthropic ideas. *a*. Efforts to improve the condition of the working classes.
   - E. The advance in scientific thought.

American History, English History and Civics.

This course is required throughout the fourth year, four periods per week. Contemporary English history is particularly important in the work of the first half-year. The essential purpose in teaching American history should be to explain clearly the character, growth and meaning of American institutions, to create reverence and love for them, to beget a due appreciation of the right of suffrage, and to cultivate power to consider intelligently the problems of the day.

The following general topics are suggested as being of great importance throughout the first half-year:—Colonial assemblies and their relations with royal governors; slavery with its industrial, economic, and social results; religious toleration; English and French rivalry for colonial possession; American industries and commerce; education.

FOURTH YEAR.

First Half (Term VII).

I. Discovery and Exploration.

II. Colonial Period.—1. Spanish, French, and English spheres of influence. 2. English expansion. 3. Social, industrial, and political development.

III. The formation of the Union.—1. Breach between the Colonies and England. *a*. Theories of Colonial administration. *b*. Influence of American environment. 2. The final separation. *a*. Demand for absolute independence. *b*. The European attitude. *c*. Genesis of American diplomacy. 3. The critical period. *a*. Individualism against federation; the growth and development of national unity. *b*. Territorial policy of the Ordinances, 1787. *c*. The work of the Federal Convention. 4. Organization of the constitutional government. *a*. Begun under Federal supremacy. *b*. Completed under republican supremacy.

The following general topics are suggested as being of great importance throughout the second half year: Industrial development; territorial expansion and the settling of new territory; political parties and their platforms; economic and social conditions; tariff laws and finances; education.

Second Half (Term VIII).

IV. Division and Reunion.—1. Political and industrial evolution and the resulting problems. 2. Industrial and economic controversies. 3. Development of the slavery question. *a*. The spirit of sectionalism as opposed to the spirit of nationalism. *b*. The controversy between the slaveholder and the freesoiler. *c*. The crystallisation of the spirit of union as opposed to the theory of state supremacy. 4. The Civil War. 5. Period of political readjustment. *a*. Reconstruction in the Southern States and its problems. *b*. History of the National Debt. *c*. Administrative questions. 6. Second era of economic progress. *a*. Settlement and development of the west. *b*. Financial problems and the tariff. *c*. Industrial invasion of foreign markets. *d*. Acquisition of new territory. *e*. Problems of the day—educational, political, social, and economic.

Civics.

Such parts of this subject as can be naturally and appropriately combined with the routine work in American history should be taken up whenever they will help to elucidate the matter in hand; for example, when copies of the original document can be used as in Group III of the appended outline, when constitutional questions arise, when new territory

is acquired, when new states are admitted, or when the question of state rights is under discussion. But a generous amount of time should be used in a thorough study of Civics with a text-book, in addition to the work suggested above, for which the following outline is offered.

I. Elementary Study of the Nature and Origin of Civil Society.
II. Origin and Development of Federal Institutions.
III. Detailed Study of—1. The Declaration of Independence. 2. Articles of Confederation. 3. Ordinance of 1787. 4. The Constitution of the United States. 5. The Constitution of New York State. 6. Charter of Greater New York.
IV. Constitutional Government as a Working System in this and other Countries.
V. Study of State and Local Governments.—1. Relation of the State to the Federal Government. 2. Individual functions of the State. 3. Powers of municipalities and towns. 4. Importance of town government,
VI. Political Parties, their Genesis and Operation.

Mediæval and Modern History.

This course is an option in the fourth year, three periods per week. A plan of the work should include the following general topics:—

FOURTH YEAR.

First Half (Term VII).

Mediæval.

I. Forming of the Nations.—1. The fusion of the Latin and Teutonic elements under the Empire. 2. Growth of the Papacy and its struggle with the Empire. 3. Feudalism and its effects upon society, the Church and Government. 4. The Crusades as a turning point in mediæval times.
II. The Age of Revival.—1. Growth of commerce, and the development of towns and city leagues. 2. The Renaissance, and its intellectual transformation of Europe. 3. The Protestant Reformation. 4. Formation of the modern European nations. Influences of Greek and Roman, Christian and German civilisations.

Second Half (Term VIII).

Modern.

I. Struggle of the Nations for Supremacy.—1. Age of religious wars. 2. Period of French domination in Europe. 3. Rise of Prussia and Russia.
II. Territorial Expansion.—1. Contest for colonial empire. 2. The French Revolution and Napoleonic wars.
III. Growth of European Nationality and Democracy since 1815.
IV. English Constitutional Development of the Nineteenth Century.
V. Scientific and Economic Advances since the Renaissance.

Economics.

The course in economics is an option in the fourth year, three periods per week. The scope of the work should include the following:—

FOURTH YEAR.

First Half (Term VII).

1. Introduction.—1. Human wants, and how they are satisfied. 2. Utilities of goods; wealth. 3. Consumption as a motive for production.
II. Production.—1. Historical development of our industrial life. 2. Handwork, guilds, machinery, factories, trusts. 3. Factors in production. *a*. Nature. *b*. Capital. *c*. The entrepreneur. *d*. Labour.
III. Exchanges.—1. Historical treatment of exchange.—fairs, the rise of the jobber, international trade. 2. Value and price. 3. Money—*a*. Its functions, kinds and value. *b*. Bimetallism and monometallism. *c*. Monetary history of the United States. 4. Credit.—*a*. Historical comparison of past and present credit. *b*. Banks and banking.

Second Half (Term VIII).

IV. Distribution.—1. Rent. 2. Interest. 3. Wages, and substitutes for the wage system. 4. Profits.
V. Governmental Interference.—1. Early English regulations. 2. Taxes. 3. Tariffs and bounties. 4. Labour laws. 5. Governmental control and ownership of natural monopolies. 6. Socialism and Communism.
VI. Finance.—1. Public expenditure.—*a*. National, State and local. 2. Public revenues.—*a*. Revenues other than taxes. *b*. Taxes. (a^1) The principles and incidence of taxation. (b^1) Direct and indirect taxes, and classes of each. (c^1) National, State and local taxes. (d^1) Comparison of American and foreign systems. 3. The Budget.—*a*. Its preparation, and comparative study of it. 4. Public indebtedness.—*a*. National, State, Municipal.

SYLLABUS FOR HIGH SCHOOLS, DEPARTMENT OF EDUCATION, THE CITY OF NEW YORK.

The Ancient Classics.

(Latin—Greek).

Syllabus in Latin and Greek.

In this syllabus are contained (1) general statements regarding subject matter, method, and aim; (2) the minimum work to be done in each year of the course. It should be noted that the general directions given under the head of Latin apply, in most cases, with equal force to Greek. Under the head of Greek these points are treated briefly. Those consulting the Greek syllabus are referred to the Latin syllabus for a fuller statement of such points.

Syllabus in Latin.

I.—GENERAL DIRECTIONS.

1. Forms.—In the first year, the pupil should master all the regular forms, and all the common irregular forms. The declensions and conjugations should be studied comparatively. Forms should be frequently reviewed, and some work in forms should be a feature of each term's work.

2. Pronunciation and reading.—In pronunciation the pupil should be required from the beginning to observe the quantity of each vowel, and to mark all long vowels in written exercises. From the first the pupil's ear should be trained by exercises in translating Latin sentences read aloud by the teacher. There should be much reading of the Latin aloud, with careful attention to intelligent expression.

3. Vocabulary and word-formation.—The pupil should early acquire a working vocabulary. The number of words known by the pupil, without recourse to the dictionary, should steadily increase; the habit of leaning unduly on the dictionary should be discouraged. The elements of word-formation should be studied early in the course. In the first year attention should be called to easy derivatives, and the pupils should be led to group together words from a common root. In the second year this work should be continued; the suffixes most frequently met with should be taught, and the pupil should be encouraged to observe English derivatives.

4. Syntax.—The study of the Latin syntax should be carried forward from term to term in a systematic way, the work of each term being founded on that of the preceding term. In the first year such principles should be presented as are usually contained in first-year books, emphasis being laid on constructions which though simple, often cause trouble in later work. In the second year, the main emphasis should be placed upon the more essential case relations and on adjective and adverbial modifiers. Only so much of the syntax of the verb should be treated as is necessary to an understanding of the text read. In the third year, the syntax of the verb should receive the emphasis, while constructions previously studied should be reviewed as they occur in the reading. In the fourth year should come reviews of syntax, and the study of constructions peculiar to poetry. From time to time, the principles of syntax already studied should be summed up in a topical review. Especial attention should be given to the analysis of sentences—to the construction of clauses and phrases, as well as of words. Indeed, the analysis of sentences should be used from the very beginning, and should receive quite as much attention as is given to that exercise in the study of English. Many

Many teachers prefer to leave a thorough study of indirect discourse for the third year. While the pupil is probably better able to comprehend at that time the intricacies of this subject, it cannot be eliminated from a study of Book I. of Cæsar, and its general principles should be treated in the study of that book.

In the study of syntax, as well as of forms, pupils should, as soon as practicable, be introduced to the grammar which they are to use throughout the course.

5. Prose composition.—Prose composition should be studied throughout the course, and should be developed in close correlation with the study of forms and syntax. The vocabulary employed should be that which has been made familiar to the pupils through their reading. The work in composition should consist mainly of sentences illustrative of syntactical principles. It may consist in part of easy, continuous prose, based upon a passage of Latin already known to the pupils.

6. Translation.—(*a*) From the outset it should be insisted on that translations be in idiomatic English. Early in the course the pupil's translations should begin to possess something of the force and flavour of the original. The translation of a Latin word by the English word which it most readily suggests by its form should be permitted only where the English word conveys the exact meaning of the original.

Exactness in translation should be sought through frequent written translations, at first of review lessons, later, of the advance lesson, or of sight passages. Accuracy and fluency should be insisted on in all review translations.

(*b*) In order to aid the pupil in attaining elegance and fluency in translation, as well as in gaining an appreciation of the meaning of the text as a whole, model translations should often be given by the teacher; standard translations should also be read to the class, and, in the case of poetic or elevated prose translations, these should be occasionally read by the class.

(*c*) The unity of the English sentence must be preserved in translation. Hence the translation of a single Latin sentence will sometimes require two or more English sentences.

(*d*) Translation at sight should be begun in the first year, and should be confined at this stage to short, simple sentences containing familiar words. In the study of Cæsar, translation at sight is valuable in connection with the preparation in the class of the lesson for the following day. In these exercises the teacher will find opportunity to show the pupil how best to grasp the meaning of a passage with which he is unfamiliar. Translation at sight should be used frequently throughout the course, and increasingly toward the end.

(*e*) Much use should be made of review translation. There should be some review translation at every recitation, while the rapid translation of a book that has been carefully studied is of very great value.

7. Pronunciation.—The Roman method is to be used.

II. GENERAL SUGGESTIONS.

1. Pupils should be encouraged to commit to memory passages from the authors read, especially passages which have appealed to them by reason of their beauty or interest.

2. It is recommenced that each pupil keep a set of note-books, in which to make a classified record of his growing knowledge of idioms, syntax, word-formation, and the like.

3. From the outset, the importance of the order of words in the Latin, and the general principles governing it, should be impressed on the pupil.

4. The lesson for the following day should always be assigned with definiteness as to details, that the pupil may clearly understand what is required of him in preparation.

III. DRILL AND THOUGHT.

1. Especial care should be taken that the thought side be continually kept uppermost, and that mechanism at every stage be subordinate. The pupils should be led to view forms and constructions as vehicles of thought-expression. Formal drill should never be allowed to seem to the pupil to be the most important part of the study of Latin. Aside from necessary drill, which should be reduced to a minimum, grammatical questions should always be asked for the purpose of making clear the meaning, and not as if such matters were ends in themselves. There should be a steady progress away from questions on forms and constructions, and towards questions on interpretation and meaning, on literary values, and on human motives and character.

2. In the study of each Latin author the pupil should be helped to keep his bearings—to understand the relation of the part of the story or argument which he is reading to the whole. To this end, arguments, campaigns, books, and episodes should be frequently summarised, and an illuminating view of the whole presented wherever practicable.

The Work in Latin.

FIRST YEAR.

The work of the first year should include the following:—

1. Such complete and careful drill in the inflections as will insure a thorough knowledge of the common forms, both regular and irregular.
2. Systematic and continuous training in the structure of easy Latin sentences, accompanied by practice in applying the common rules of syntax in writing Latin.
3. Translation into English of Latin sentences, and of twenty to thirty pages of connected discourse of such a degree of difficulty as will prepare the pupil for the study of the author of the second year.
4. The acquisition of a vocabulary as extensive as is consistent with thoroughness.

The chief topics to be taken up during this year are summarised as follows:—

First Half (Term I).

Inflections.—The five declensions of nouns; the declensions of adjectives and of the comparative degree; the verb *sum*, indicative mood; the indicative mood, active and passive voice, of the four conjugations; the commoner demonstrative pronouns and the relative.

Syntax.—The agreement of the verb and subject; the case of the subject and the direct object; the agreement of the adjective and of the relative; appositive and predicate nouns; the genitive with nouns; and ablatives of cause, means, and agency.

Second Half (Term II).

Inflections.—The subjunctive mood and the remaining forms in the inflection of the verb; pronouns and numerals; comparison of adjectives and the formation and comparison of adverbs; deponents; the periphrastic conjugations; the irregular verbs, *possum, fiero, eo, fio, volo, nolo, malo.*

Syntax.—No detailed statement is made of the principles brought before the pupil during this term. The elementary text-books do not vary greatly in the principles, but only in the order of their introduction.

SECOND YEAR.

First Half (Term III).

Cæsar's Gallic War, Books II and III.

Second Half (Term IV).

Cæsar's Gallic War, Books I and IV.

1. Such references should be made to the history, antiquities, and geography as are needed to render clear to the pupil the content of the text.

2. There must be translation at sight of simple prose. A part of the next day's lesson may be used, or selections may be made from Books V, VI, and VII of the Gallic War, or, at the discretion of the teacher, from the authors mentioned in 3.

3. Further reading may be done, when time allows, in the following books:—Viri Romæ, Nepos, Cæsar (Books V, VI, VII), Eutropius, Ovid, Curtius.

4. There should be a systematic study of syntax, based upon the principles illustrated in the text read.

5. Exercises to the extent of one period a week should be given in the translation into Latin of detached sentences illustrating the more common principles of syntax, and of easy continuous prose based on the author read.

THIRD YEAR.

First Half (Term V).

Cicero, Fourth Oration against Catiline, I, II, and III.

Second Half (Term VI).

Cicero, Fourth Oration against Catiline, the Oration for the Manilian Law, and either the Oration for Archias or another.

1. The history, political and social life and customs of the Romans should receive much attention during this year, and pupils should be encouraged to read for themselves on these subjects.
2. Special emphasis should be placed upon the uses of the subjunctive mood.
3. The study of the simpler rules of word-formation should be a feature of the work.
4. There should be a systematic study of syntax, based upon the principles illustrated in the text read.
5. The pupil should have practice in translation at sight, either from easy Latin or, at the discretion of the teacher, from the authors mentioned in 6.
6. Further reading may be done, when time allows, in Cicero, Sallust's Catiline, Ovid, or Cæsar's Civil War.
7. Exercises, to the extent of one period a week, should be given in the translation into Latin of detached sentences, and of continuous prose, based on the authors read.

FOURTH YEAR.

First Half (Term VII).

Virgil's Æneid, the first two thousand lines.

Second Half (Term VIII).

Virgil's Æneid, through the Sixth Book.

1. Further reading may be done in Virgil, Cicero, or other authors.
2. So much of prosody should be taught as is needed to make clear the structure and quantities of the dactylic hexameter. There should be much practice in metrical reading.
3. Mythology, the geography of the Æneid, and the figures of rhetoric and prosody, should receive attention. The humanistic and historic aspects also should be studied.
4. Thirty periods should be devoted to the translation into Latin of detached sentences and of connected discourse based on any of the authors read during the course.
5. The additional periods in this year should be devoted to composition, advance reading, sight translation, or reviews, according to the needs of the class.

GREEK.

General Directions.

1. Pronunciation.—The correct sounds of the Greek letters and of combinations of letters should be insisted on from the start. The ear should be trained as carefully as the eye. No attempt should be made to turn a sentence from Greek into English without pronouncing the Greek properly, so as to bring out all the force that forms, order, and particles give to it.
2. Accent.—The general laws of accent should be taught and daily practice given in applying them. The exceptions should be gradully mastered.
3. Inflections.—Great care should be taken to show the logical building up of inflectional forms. Constant practice, both oral and written, should be given in the study of forms. Pupils should be systematically drilled in the formation of tense systems. Frequent written tests are recommended. Since much depends on the work of the first year, entire accuracy and attention to details should be insisted on as an essential part of the study of Greek.
4. Vocabulary.—Great care should be taken that each pupil acquire a good working vocabulary. To this end word lists are valuable, but they should be used only in grouping related words, and as a review of words already carefully learned. The study of English derivatives should be carried on in connection with this subject.
5. Translation.—There should be daily practice in translating Greek into English and English into Greek. From the start such essential points as the position of the verb and the force of particles, and the methods of expressing emphasis in a sentence, should be presented carefully.
6. Proper names. In turning proper names into English observe the following method: Write the Greek names in the Latin form and pronounce with English sound values, but with Latin accentuation.
7. Comparative study.—The great similarity and interesting differences in the inflections and syntax of Greek and Latin should be pointed out.
8. Recitation.—The recitation should be not only a test of knowledge, but an opportunity for the stimulating presentation of new matter.
9. Values.—The teacher must keep a proper perspective in dealing with all these matters, giving to each subject its true value.

FIRST YEAR.

First Half (Term III).

The work of the first term should cover the three declensions in both nouns and adjectives, including also contract nouns and adverbs; the most of the inflections of the regular verb (in omega) with contracts; the chief pronouns; the more elementary principles of syntax.

Second Half (Term IV).

In the second half-year the regular inflections should be completed, and the knowledge of syntax extended. There should be some reading of simple connected Greek followed by Chapter I of Book I of The Anabasis. The mastery of forms should be as thorough as possible.

SECOND YEAR.

First Half (Term V).

Xenophon's Anabasis, Book I and Book II, Chapter I.

Second Half (Term VI).

Xenophon's Anabasis, Book II, Chapters II to VI, inclusive; Books III and IV, if time permits.

The following matters are of special importance:—

1. Reading.—Either teacher or pupil should read aloud each passage in the most careful manner, so that its full meaning may be brought out and grasped by those listening. Such reading should invariably precede translation at sight.
2. Translation.—Great care should be taken to avoid "Greek-English" in translation. Accept only idiomatic English. An uninterrupted translation of an entire passage should be encouraged when possible. Careful written translations should be often required.
3. Grammar.—Care must be taken to insure a free, constant, and systematic use of the grammar. There should be: (*a*) Review of declensions. (*b*) Daily drill on the verb-synopses and principal parts. (*c*) A careful study of syntax. Latin and Greek syntax continually compared by definite illustrations.
4. Sight translation.—This test of the powers of each pupil should be constantly employed as a stimulating and important part of the work, but should never be allowed to take the place of carefully prepared lessons.
5. Vocabulary.—The painstaking acquisition of a vocabulary is continued. The student should arrange for himself, in groups, words formed from the same root.
6. Composition.—Work in composition should continue through the year. It should consist partly of sentences framed to illustrate systematically important principles of syntax, partly of continuous prose. The vocabulary should be mainly from the text read, and the continuous prose should be based on passages of text which the student has in mind.
7. History and Geography.—A part of the Greek history studied in the preceding year should be reviewed in connection with the story of The Ten Thousand Greeks. Geography should be introduced, as far as it illustrates the text, and some attention should be given to Greek life and antiquities.

A proper perspective must be employed by the teacher in presenting the foregoing matters to give each subject its true value, and to make the recitation not only a test of knowledge, but a stimulating presentment of new matter.

THIRD YEAR.

First Half (Term VII).

Homer's Iliad, Book I, and part of II.

1. The greatest care is to be taken that the translations shall be careful and adequate. Every indication in a sentence, no matter how minute, which can aid us in faithful rendering, is to be noted. Matthew Arnold's Essay on Translating Homer is suggested as a guide.

2. Homeric forms are always to be considered in reference to Attic forms. Aim to fix more definitely the Attic Greek by comparison with the epic forms.

3. Scansion.—Rhythmical reading with careful attention to the quantities of the syllables.

4. Mythology.—An accurate knowledge of the principal and most interesting facts in regard to the greater gods and their relations.

5. The legendary period of Greek history reviewed.

6. The use of some lexicon is advised.

7. The use of casts when possible and of photographs will add materially to the interest and comprehension of the pupil. The Greek worship and love of beauty can in this way be made intelligible.

Second Half (Term VIII).

1. The Iliad, Book II completed, omitting the catalogue of ships, and III; selections from Books IV to VIII inclusive, or from The Odyssey.

2. Sight translation of appropriate passages.

3. Attic prose or Anabasis review, with prose composition.

Review of grammar.

4. Supplementary readings from metrical translations of the Iliad or the Odyssey, such as Chapman's, Dryden's, Pope's, Cowper's, and Bryant's, are strongly recommended. In this way the sense of the literary value of Homer may be heightened.

As the recitation period is short, it is suggested that each teacher plan his work very carefully so that the greatest amount of progress may be made each day.

SYLLABUS FOR HIGH SCHOOLS, DEPARTMENT OF EDUCATION, THE CITY OF NEW YORK.

MATHEMATICS.

(Algebra, Geometry, Trigonometry, Arithmetic).

SYLLABUS IN MATHEMATICS.

GENERAL SUGGESTIONS.

The pupils' interest in algebra should be aroused by the introduction of the equation at an early stage.

General principles should be developed largely by the pupils guided by the skilful questioning of the teacher.

Problem work is to be emphasised throughout.

After having studied factoring, pupils should be required to employ it as much as possible in their work in fractions and in the solution of equations.

Rapidity, accuracy, and neatness should be insisted upon in all written work. Pupils should be required to verify their results. Oral explanations of work should be made in exact technical language.

GENERAL DIRECTIONS.

1. In geometry, as well as in algebra, definitions should be introduced only as they become necessary.

2. Many simple illustrative geometrical constructions should be required at the outset. For this purpose pupils should use compasses, ruler, and protractor.

3. The regular work in demonstrative geometry should be commenced by the reading of a few fundamental propositions, with an explanation of the several steps. Next should follow easy exercises based upon these propositions. After the pupils have in this way acquired a sufficient acquaintance with geometrical methods, the teacher may begin to drill upon the regular propositions.

4. Throughout the course, emphasis should be placed upon original exercises.

5. In problems, compasses and ruler should be employed to ensure accurate constructions.

6. Pupils should be trained in the proper arrangement of their written work.

7. Algebra should be co-ordinated with geometry as far as possible.

8. Geometrical solutions and solutions by means of the natural sines, tangents, &c., should precede the solutions by means of logarithms, in the seventh term.

9. Pupils should be encouraged to apply, as far as possible, their knowledge of logarithms and trigonometry to the work of the eighth term.

10. Recitations should be so conducted in every grade as to require the activity of the largest possible number of pupils. In all branches of mathematics additional and more difficult exercises should be supplied to such pupils as have the ability to work more rapidly than their classmates.

OUTLINE OF WORK.

FIRST YEAR.

First Half.—(Term I).

ALGEBRA.—Five periods weekly.

Necessary definitions. Drill in algebraic notation. Practice in translating from algebraic to verbal language, and *vice versa*.

Addition; subtraction; multiplication, including forms by inspection: $(x + a)^2$, $(x + a)(x - a)$, $(a + b + c)^2$, $(x + a)(x + b)$, $(x + a)(y + b)$; division, including forms by inspection: $a^2 - b^2$, $a^3 \pm b^3$.

Simple equations, numerical and literal, not including fractions. Problems involving such equations.

Factoring, including forms: $ax + bx + cx$, $ax + bx + ay + by$, $a^{2n} \pm 2a^n b^n + b^{2n}$, $a^{2n} - b^{2n}$, $ax^2 + bx + c$, $a^{4n} + a^{2n} b^{2n} + b^{4n}$, $x^n \pm y^n$.

Highest common factor and least common multiple, factoring method chiefly.

Fractions: reduction, multiplication, division, addition, subtraction; changing to mixed expressions, and *vice versa:* manipulation of signs; complex fractions.

Fractional equations, numerical and literal. Problems involving fractional equations.

Second Half (Term II).

ALGEBRA.—Five periods weekly.

Simple simultaneous equations of two or more unknown quantities. Problems involving the use of two or more unknown quantities.

Involution: monomials, polynomials; including forms $(a + b)^n$, $(a + b + c \ldots .)^2$.

Evolution: monomials, polynomials; extraction of square root and cube root of numbers; extraction of roots whose indices are multiples of two and of three.

Theory of indices: proofs for integral exponents of $a^x \cdot a^y = a^{x+y}$, $\frac{a^x}{a^y} = a^{x-y}$, $(a^x)^y = a^{xy}$, $(ab)^x = a^x b^x$; intepretation of a^0, a^{-x}, $a^{\frac{x}{y}}$; simplification of expressions involving the above principles.

Surds: simplification, addition, subtraction multiplication, division; reduction to same order; placing coefficient under radical sign; involution and evolution of monomials and polynomials; rationalisation of denominator.

Imaginaries

Imaginaries: addition, subtraction, multiplication, division, involution.

Quadratic equations: pure, adfected; numerical, literal; problems involving quadratics; equations in quadratic form; simultaneous quadratics including forms.

$$\left\{\begin{matrix} x^3 \pm y^3 = a \\ x \pm y = b \end{matrix}\right\} \qquad \left\{\begin{matrix} x^4 + x^2y^2 + y^4 = a \\ x^2 \pm xy + y^2 = b \end{matrix}\right\}$$

$$\left\{\begin{matrix} Ax^2 + Bxy + Cy^2 = M \\ A'x^2 + B'xy + C'y^2 = N \end{matrix}\right\} \qquad \left\{\begin{matrix} Ax^2 + Bxy + Cy^2 = M \\ A'x + B'y = N' \end{matrix}\right\}$$

SECOND YEAR.

First Half (Term III).

GEOMETRY.—Four periods weekly.

Books I and II, omitting measurement of angles. Simple constructions. At least seventy-five exercises in connection with each book.

Second Half (Term IV).

GEOMETRY.—Four periods per week.

Book II completed. At least Books III and IV, not fewer than seventy-five exercises in connection with each book; emphasis to be placed upon geometric drawing.

THIRD YEAR.

First Half (Term V).

GEOMETRY.—Two periods. ALGEBRA.—One period.

Plane geometry completed. Algebra continued and extended.

Second Half (Term VI).

GEOMETRY.—One period. ALGEBRA.—Two periods.

Ratio and proportion; interpretation of $\frac{0}{0}$. $\frac{a}{0}$. $\frac{0}{a}$. $\frac{\infty}{\infty}$; theory of quadratics; indeterminate equations of first degree; progressions; permutations and combinations (elementary treatment); binomial theorem. Additional exercises in plane geometry.

FOURTH YEAR (ELECTIVE).

First Half (Term VII).

Four periods weekly.

Logarithms, plane trigonometry, or review of mathematics.

Second Half (Term VIII).

Four periods weekly.

Solid geometry, higher algebra, spherical trigonometry, or review of mathematics, including fifty periods of arithmetic.

SYLLABUS FOR HIGH SCHOOLS, DEPARTMENT OF EDUCATION, THE CITY OF NEW YORK.

MODERN FOREIGN LANGUAGES.

(German, French, Spanish.)

SYLLABUS IN MODERN LANGUAGES.

Three courses of Modern Foreign Language Instruction have been established in the high schools of the City of New York, to be known as (*a*) the elementary; (*b*) the intermediate; (*c*) the advanced course; and to embrace two, three, and four years respectively.

GENERAL RECOMMENDATIONS.

1. Where the study of a modern foreign language is commenced in the second or third year of the high school-course, the work should be done more intensively than where it is begun in the first; and closer attention to forms, a larger amount of reading matter, and more extensive oral practice should be required.

2. Throughout the course the modern languages should be treated as living languages; tongue and ear must be trained from the beginning, and drill in pronunciation must be steadily maintained, until good speech habits are formed. These exercises will be enhanced by concentrating attention on a series of subjects in the conversation drill that are closely related in time, space, or logical order, as suggested in the Gouin method.

3. The chief aims of the instruction, however, should be ability to read well, and to translate simple English prose into the foreign idiom. Thorough drill upon the rudiments of grammar is, therefore, indispensable.

4. The building up of a vocabulary, which is one of the most important lines of the work, should not be limited to that which is acquired in reading. The teacher should, from many sources, add to the stock of words and idioms at the ready command of the pupil. The vocabulary at the end of the first year should consist of about eight hundred of the most commonly used words, and this number should steadily increase from term to term.

5. The quantity of reading matter suggested in the various terms must, in every instance, be understood to be a minimum.

6. Formal translations of the text should be gradually lessened. In the fourth year this exercise will be necessary only in interpreting difficult passages, and in turning the text into idiomatic English. Such translations may be an easy means of testing the pupil's preparation of the lesson, but there are other ways of accomplishing the same end, with greater profit to the class. The most important of these are:—

(*a*) The relating of the content of the reading matter. Questions put to pupils for this purpose may at first be in English, but later in the foreign language, which should as soon as possible be made the medium of instruction.

(*b*) Dictating selected parts of the day's foreign text to be taken down by the pupil in English, and then re-translated into the foreign language.

(*c*) Requiring the pupil to bring into the class a written translation of parts of the foreign text, to be re-translated, orally or in writing.

(*d*) Requiring free reproductions, abstracts, and summaries of selected portions of the reading matter.

7. Pupils should be encouraged to undertake the home reading of easy books, without a dictionary, under the general direction of the teacher.

Some evidence of the work done in this way should be required from time to time, in the form of brief sketches of plot or character, or short paragraphs in answer to questions put by the teacher.

8. The differences in the various grammar text-books at our disposal lie mainly in—

A. The continuity and order of treatment.—(*a*) The instruction in grammar should proceed on deductive rather than inductive lines. Close attention to a technical point, illustrated by a few striking instances, has been found to yield better results than those derived from fragmentary and disconnected exemplifications of the same point. (*b*) The ordinary lesson-book may have clear advantages over the grammar, especially in first-year classes; but this circumstance should not prevent the introduction at the earliest possible moment of the particular grammar text-book which the pupils are to use when they take up the intensive study of the language.

B. The illustrative matter.

The illustrative matter and the exercises for translation into the foreign language should be of a practical and every day kind.

9. In the beginning, English script is to be used in writing German; but later in the course the German script should also be taught, and practice given in reading German handwriting.

Syllabus in German

Elementary Course.

FIRST YEAR.

A. The scope of the instruction.—At the end of the first year the pupil should be able to read correctly, and to translate into good English, easy selections from German authors containing only words in most common use, and to show a reasonable proficiency in elementary grammar.

B. The work to be done.

First Half (Term I).

(*a*) Inflections of articles and words declined like articles; genders of nouns as far as they can be easily ascertained by endings or meanings; declension of nouns and adjectives in ordinary use; personal, possessive, and interrogative pronouns; cardinal and ordinal numbers; most necessary prepositions, with the cases they govern; the auxiliary verbs in the indicative; the active voice in the indicative of weak verbs.

(*b*) Constant attention should be given to pronunciation, and there should be abundant oral and written practice in the use of grammatical forms, and in the formation and translation of sentences in English and in German. The acquiring of a ready vocabulary of words in ordinary use and the memorising of colloquial phrases should not be neglected.

(*c*) Writing of easy German prose.

(*d*) Writing German from dictation.

Second Half (Term II).

(*a*) Grammar.—The declension of nouns completed; comparison of adjectives; the subjunctive and conditional moods of weak verbs; conjugation of strong verbs; model auxiliaries, separable and inseparable verbs; the passive voice; reflexive and impersonal verbs; the relative pronouns; the most necessary conjunctions and adverbs, and the elementary rules of word order.

(*b*) Reading and practice.—About fifty pages from a graded reader, with easy variations upon the sentences of the text; constant drill in oral and written practice in grammatical forms, and the formation and translation of sentences, as in the first term; memorising of colloquial phrases to be continued.

(*c*) Writing German from dictation.

SECOND YEAR.

A. The scope of the instruction.—At the end of the second year the ability to read correctly and to translate at sight into good English should extend to easy German dialogue or narrative prose or poetry. The pupil should be able to answer in German simple questions on the matter read. His knowledge of grammatical forms and construction should cover the whole ground of accidence and elementary syntax.

B. The work to be done.

First Half (Term III).

(*a*) Grammar.—Review and continuation of accidence; the syntax of the cases; more intensive study of the modal auxiliary verbs.

(*b*) Reading and practice.—About fifty pages of narrative prose, with practice in the variation of sentences and in free reproduction; memorising of idiomatic phrases to be continued; practice in conversational exercises on the matter read, as well as on the affairs of everyday life.

(*c*) Writing German from dictation.

(*d*) Letter-writing.

Second Half (Term IV).

(*a*) Grammar.—Review and completion of formal grammar with the syntax of the infinitive and the subjunctive moods and the tenses; word order completed.

(*b*) Reading and practice.—About one hundred pages of easy German literature selected from the reading material mentioned below, including one short play. Practice in reproduction to be continued; frequent exercises in sight reading; systematic practice in prose composition; conversational exercises.

(*c*) Writing German from dictation.

(*d*) Easy written prose composition, including letter-writing.

Intermediate Course.

THIRD YEAR.

A. The scope of the instruction.—At the end of the intermediate course, the pupil should be able to read at sight easy modern German prose; to reproduce, in his own words, portions of the matter read; to answer any grammatical questions relating to usual forms and essential principles of the language, including syntax and word formation; to explain, as far as explanation may be necessary, a passage of classical literature taken from some text previously studied.

B. The work to be done.

First Half (Term V).

(*a*) Grammar.—Study of the less usual forms of nouns and verbs; more intensive study of pronouns, of modal auxiliaries and of moods and tenses; word-formation, including derivatives, cognates, and force of prefixes and suffixes.

(*b*) Reading.—The reading of about one hundred and twenty-five pages, including sight reading, of moderately difficult prose and poetry, with constant practice in giving, sometimes orally and sometimes in writing, paraphrases, abstracts, or reproductions from memory of selected portions of the matter read.

(*c*) Prose composition.—Translation of connected passages of simple English.

(*d*) Colloquial exercises continued; letter-writing.

Second Half ((Term VI).

(*a*) Grammar references in connection with the reading.

(*b*) Reading.—The reading of about one hundred and seventy-five pages of moderately difficult prose and poetry, chiefly classical, with exercises as above.

(*c*) Prose composition and colloquial exercises continued.

(*d*) Letter-writing.

Advanced Course.

FOURTH YEAR.

A. The scope of the instruction.—At the end of the fourth year, the student should be able to read, after brief inspection, any modern German prose that is free from unusual difficulties. The aim should be to read easily, rapidly, and yet with intelligent, general appreciation, gradually dispensing with formal translation except of difficult passages.

First Half (Term VII).

(*a*) Reading.—The reading of about two hundred pages of modern and classic literature with paraphrases and exercises as above.

(*b*) Prose composition.—The writing in German of a few short themes upon assigned subjects; independent translation of English into German.

(*c*) Letter writing, including business correspondence.

(*d*) Conversation.—At this stage the aim is to make German exclusively the medium of instruction.

(*e*) Supplementary reading (*see* general recommendations).

Second Half (Term VIII).

(*a*) Reading of about two hundred and fifty pages as in preceding term.

(*b*) Prose composition, conversation, and supplementary reading as in preceding term.

(*c*) Reference reading upon lives and works of the great writers studied.

(*d*) Letter-writing as in the preceding term.

Suggested Readings.

ELEMENTARY COURSE.

Suitable reading matter for the elementary course to follow the preliminary reading may be chosen from the following:—

Leander's Träumereien; Heyse's L'Arrabbiata; Jensen's Die braune Erica; Gerstäcker's Germelshausen; Zschokke's Der zerbrochene Krug; Baumbach's Im Zwielicht; Benedix's Der Prozess; Benedix's Nein; Wilhelmi's Einer muss heiraten; Benedix's Eigensinn; Baumbach's Sommermärchen; Eichendorff's Aus dem Leben eines Taugenichts; Gerstäcker's Irrfahrten; Chamisso's Peter Schlemihl; Baumbach's Die Nonna; Baumbach's Der Schwiegersohn; Wildenbruch's Der Letze; Wildenbruch's Das edle Blut; Storm's Immensee; Stifter's Das Heidedorf.

INTERMEDIATE COURSE.

Suitable reading matter for the intermediate course to follow the preliminary reading may be chosen from the following:—

Der Fluch der Schönheit; Burg Neideck, and others of Riehl's Kulturgeschichtliche Novellen; Fouqué's Undine; Heyse's Kolberg; Auerbach's Brigitta (abridged); Lessing's Minna von Barnhelm; Schiller's Wilhelm Tell; Schiller's Das Lied von der Glocke; Schiller's Der Neffe als Onkel; Heyse's Anfang und Ende; Groller's Inkognito; Seidel's Herr Omnia; Hauff's Karawane; Hauff's Das kalte Herz; Von Sybel's Die Erhebung Europas gegen Napoleon; Hillern's Höher als die Kirche; von Scheffel's Ekkehard; Freytag's Soll und Haben.

ADVANCED COURSE.

Suitable reading matter for the advaneed course to follow the preliminary reading may be chosen from the following:—

Schiller's Die Jungfrau von Orleans; Goethe's Egmont; Goethe's Goetz von Berlichingen; Lessing's Nathan der Weise; Goethe's Sesenheim; Schiller's Maria Stuart; Schiller's Geschichte des dreissig-jährigen Krieges, Buch 3; Kohlrausch's Das Jahr 1813; Freytag's Bilder aus der Deutschen Vergangenheit; Aus dem Staat Friedrichs des Grossen; Aus dem Jahrhundert des grossen Krieges; Karl der Grosse; Goethe's Hermann und Dorothea; Freytag's Journalisten; Heine's Reisebilder; Grillparzer's Die Ahnfrau; Grillparzer's Der Traum ein Leben; Kleist's Prinz von Homburg; Fulda's Der Talisman.

Syllabus in French.

Elementary Course.

FIRST YEAR.

A. The scope of the instruction.—At the end of the first year the pupil should be able to pronounce French accurately, to read at sight easy French prose, to know the rudiments of grammar, and to translate into French simple English sentences taken from the language of everyday life. Constant practice in framing sentences from the subject-matter read should a feature of the elementary French course, so as to cultivate readiness in the reproduction of forms and expressions used in the foreign tongue.

B. The work to be done.

First Half (Term I)).

(*a*) Grammar.—Elementary rules concerning articles, nouns, adjectives, and auxiliaries; and models of the regular verbs.

(*b*) Reading and practice.—Careful drill on the pronunciation of simple vowels, nasal vowels, compound vowels, diphthongs and consonants; reading of easy French prose—about fifty pages; exercises composed of easy sentences based on the grammatical forms.

(*c*) Writing French from dictation.

Second Half (Term II).

(*a*) Grammar.—Review of the work of the first term; rules for pronouns and participles; irregular verbs, about twenty of those more commonly used; concise study of ordinary adverbs, prepositions and conjunctions; elementary rules of syntax and word-order.

(*b*) Reading and practice.—Exercises on the above; reading of easy French prose—about one hundred pages.

(*c*) Writing French from dictation.

SECOND YEAR.

First Half (Term III).

(*a*) Grammar.—Review of the work done during the first year; mastery of the forms and uses of pronouns and pronominal adjectives; irregular verbs with exercises.

(*b*) Reading and practice.—Reading of about one hundred and fifty pages, easy French text.

(*c*) Writing French from dictation.

(*d*) Easy French composition based upon the subjects read.

Second Half (Term IV).

(*a*) Grammar.—Review of the work done during the previous term; special study of the conditional and subjunctive moods.

(*b*(Reading and practice.—Reading of easy modern prose—about one hundred and fifty pages; easy composition independent of French texts read; home work in supplementary reading.

(*c*) Writing French from dictation.

(*d*) French composition based upon the subjects read.

Intermediate Course.

THIRD YEAR.

A. Scope of the instruction.—At the end of the intermediate course the pupil should be able to read at sight ordinary French prose or poetry; to translate into French a connected passage of English; to answer questions on the rules of syntax. French should be the medium of instruction.

B. Work to be done.

First Half (Term V).

(*a*) Grammar.—Rules of syntax, with special drill on the idiomatic uses of such verbs as *aller, venir, devoir, pouvoir, alloir.*

(*b*) Reading and practice.—Reading of French prose—about two hundred pages; oral and written practice in paraphrases of works read. French composition.

Second Half (Term VI).

(*a*) Grammar.—Review of the chief difficulties of the syntax.

(*b*) Reading and practice.—Reading of more difficult French prose and poetry—about two hundred and fifty pages; oral and written reproductions of portions of the matter read. Letter-writing and composition in French.

Advanced Course.

FOURTH YEAR.

A. Scope of the instruction.—At the end of the advanced course, the pupil should be able to read at sight difficult French, and to write essays in French on subjects connected with the books read or on some simple topic; to translate easy English prose, and to carry on a simple conversation in French. He should also have some knowledge of the works and lives of leading authors of the last three centuries.

B. The work to be done.

First

First Half (Term VII).

(*a*) Grammar.—Special study of syntax and construction in the text-books read.

(*b*) Reading and practice.—Literature of the eighteenth and nineteenth centuries—about four hundred pages; composition and essays. Letter writing.

Second Half (Term VIII).

(*a*) Reading and practice.—Literature of the seventeenth century—about five hundred pages; reference reading upon the lives and the works of the principal writers studied; composition and essays. Letter writing.

SUGGESTED READINGS.

ELEMENTARY COURSE.

Suitable reading matter for the elementary course may be chosen from the following :—

Bruno's Le tour de la France and Les enfants patriotes; Daudet's easier short stories; Foncin's Le pays de France; Mairet's La tache du petit Pierre, and L'enfant de la lune; Halévy's L'Abbé Constantin; La Brète's Mon oncle et mon curé; Erckman-Chatrian's Madame Thérèse and Le conscrit; Nodier's Le chien de Brisquet; Dumas' La tulipe noire; Guerber's La main malheureuse; Coppée's Le Luthier de Crémone; J. Verne's Une ville flottante and Vingt mille lieues sous les mers; J. Sand's la petite Fadette; Malot's Sans famille; Labiche and Martin's La poudre aux yeux.

INTERMEDIATE COURSE.

Suitable texts for the intermediate course are :—

Schultz's La nauvaine de Colette; Souvestre's Un philosophe sous les toits; Sandeau's Mlle. de la Seiglière; Mérimé's Colomba; Thiers' Expédition de Bonaparte en Egypte; Sarcey's Le siège de Berlin; Balzac's Eugénie Grandet; Feuillet's Le roman d'un jeune homme pauvre; Daudet's Tartarin de Tarascon; Victor Hugo's Quatre-vingt-treize; Alfred de Vigny's Cinq-Mars; Dumas' Les trois mosquetaires; Scribe's La bataille des dames and Le verre d'eau; Labiche's La grammaire; Beaumarchais' Le barbier de Séville.

ADVANCED COURSE.

Suitable texts for the advanced course are :—

Loti's Pêcheur d'Islande; Gautier's Voyage en Espagne et Jettatura; Lettres de Madame de Sévigné; Le Siècle de Louis XIV; Victor Hugo's Les Misérables and Notre-Dame de Paris; Fables de La Fontaine; Morceaux choisis de Corneille, Molière, and Racine.

SYLLABUS IN SPANISH.

Elementary Course.

FIRST YEAR.

A. The scope of the work. At the end of the elementary course, the pupil should be able to pronounce Spanish accurately, to read at sight easy Spanish prose, to put into Spanish simple easy sentences taken from the language of every-day life, or based upon a portion of the text read, and to answer questions on the rudiments of the grammar.

B. The work to be done.

First Half (Term III).

(*a*) Grammar.—Simple conversation exercises, involving the rudiments of grammar, including articles, nouns, adjectives, pronouns; the use of the three forms of the neuter; adverbs; simple tenses of the three regular conjugations.

(*b*) Reading and practice.—Careful drill in pronunciation; construction of sentences on the subject of the day's lesson; reading of easy Spanish prose—about fifty pages.

(*c*) Writing Spanish from dictation.

Second Half (Term IV).

(*a*) Grammar.—Conversation exercises, involving a review of the work of the first term; prepositions, conjunctions, interjections, complete conjugation of the auxiliary verbs, compound forms of the regular verbs *haber, tener, ser, estar.* Principal tenses of the most common irregular verbs.

(*b*) Reading and practice.—Construction of sentences illustrative of the subjects of the day's lesson; reading of about one hundred pages of easy Spanish prose.

(*c*) Writing Spanish from dictation.

SECOND YEAR.

First Half (Term V).

(*a*) Grammar.—Conversation exercises, involving a general review of the grammar as previously studied, including a systematic study of the regular and irregular verbs.

(*b*) Reading and practice.—Reading of about one hundred and fifty pages of ordinary Spanish prose, with constant practice in giving paraphrases of the work read; introduction to Spanish literature, with some account of the authors read; easy selections to be studied and memorised.

(*c*) Writing Spanish from dictation.

(*d*) Prose composition, oral and written. Letter writing; prose composition independent of the text read.

Second Half (Term VI).

(*a*) Grammar.—More intensive study of grammar and of idiom.

(*b*) Reading and practice.—Reading of about two hundred pages of Spanish prose and poetry, with practice in giving paraphrases of the text read; additional literary selections to be studied and memorised.

(*c*) Writing Spanish from dictation.

(*d*) Prose compositions, oral and written.—Letter writing—commercial, social. Independent prose composition.

Intermediate Course.

THIRD YEAR.

A. The scope of the instruction.—At the end of the intermediate course, the pupil should be able to read at sight ordinary Spanish prose or simple poetry; to translate into Spanish a connected passage of English, and to answer questions on the rules of Syntax. Spanish should be the medium of instruction.

B. The work to be done.

First Half (Term VII).

(*a*) Grammar.—Passive voice; the word *se; haber* used impersonally; peculiarities of the verb; irregular verbs; peculiar irregular verbs; irregular past participles. Easy Spanish composition based on the day's lesson.

(*b*) Reading and practice.—Reading about two hundred pages of easy Spanish prose; oral and written abstracts of assigned portions of reading matter.

(*c*) Conversation.

(*d*) Prose composition.

(*e*) Letter writing.

Second Half (Term VIII).

(*a*) Grammar.—Conversation exercises, involving a review of the work of the preceding term; special study of prepositions and the verbs *sobrar* and *faltar;* synonyms; idioms; proverbs; syntax and use of prepositions; construction of sentences illustrative of grammatical rules.

(*b*) Reading and practice.—Reading of about two hundred and fifty pages of easy modern prose; oral and written abstracts of portions of the text read.

(*c*) Prose composition.—Easy composition, independent of the text read; letter writing.

(*d*) Conversation.

Suggested Readings.

ELEMENTARY COURSE.

First Year.

First Term.—Fontaine's "Doce Cuentos Escogidos"; Matzke's "Spanish Reader." Second term.—Alarcón's El Capitán Veneno.

Second Year.

First Term.—Galdós' Doña Perfecta. Second Term.—The same; Cortina's Modelos para Cartas.

INTERMEDIATE COURSE.

Third Year.

First Term.—Moratín's El si de las Niñas. Second Term.—Cervantes' El Cautivo; Don Quixote (Spanish edition).

SYLLABUS FOR HIGH SCHOOLS, DEPARTMENT OF EDUCATION, THE CITY OF NEW YORK.

Biology.

(Botany, Zoology, Physiology.)

Syllabus in Biology.

GENERAL RECOMMENDATIONS.

As a more comprehensive view of each of the subjects embraced under biology (botany, zoology, and physiology) can be obtained by the consideration of a large number of topics, it is suggested that many topics be studied somewhat briefly, though it is important that a few typical specimens should be studied intensively. The conditions for favourable study of some of the topics outlined under botany and zoology vary among the different high schools of the city, and vary for the same school at different seasons; and on this account considerable latitude may be exercised in the choice of topics. The order of presentation of the topics under each subject, and the order in which the three subjects should be taught, is of less importance than the presentation of them under the most favourable conditions possible.

In the study of botany and zoology three lines of work should be carried on:—

First.—Field work, including—1. Work conducted by the teacher outside the school building, in the woods, fields, and parks. 2. Work carried on by the individual pupils, and reported to the teacher for suggestions and assistance.

Second.—Laboratory work, including—1. The study of living plants and animals in the school-room. 2. The study of prepared specimens, dissections, and microscopic slides. 3. The careful dissection of a few important types. 4. Careful drawing and descriptions of specimens should be made.

Third.—Recitation work, including—1. A consideration of the facts observed in the field and laboratory. 2. A consideration of important plants and animals related to the types already studied. 3. A consideration of the elementary facts and principles relating to the classification of plants and animals. 4. Written descriptions of some of the specimens studied.

The five periods per week given to biology should be divided as nearly equally as possible between laboratory and recitation work.

FIRST YEAR.

First Half (Term I).

Botany.

Required topics: I, II, III, IV, VII. Optional topics: V, VI. For first year pupils, the study of botany should include such simple chemical and physical experiments as are necessary for the understanding of plant life.

I. Seeds and seedlings.—Topics: Monocotyledons, dicotyledons, gymnosperms; kinds of food stored, determined by experimental tests; conditions of germination; the development of the elements in the embryo into organs of the seedling.

II. Root.—Topics: General structural characteristics; secondary roots, root hairs, root cap, and growing point; raw food material, osmosis, movements of sap, storage of food; arrangement of tissues.

III Shoot.—1. Stem. Topics: external features; arrangement of branches; modifications in form to fit environment; underground stems; tissue arrangement in monocotyledons and dicotyledons; functions of stems. 2. bud. Topics: relation of buds to the formation of branches; kinds of buds; bud protection; vernation. 3. Leaf. Topics: structure; comparison of monocotyledons and dicotyledons in leaf and stem; leaf arrangement and light relations; transpiration; raw food material; photosynthesis; digestion; assimilation; respiration; fall of leaf.

IV. Flower and fruit.—1. Flower. Topics: structure and function of parts of the flower; adaptations for pollination; fertilisation; principal forms of inflorescence. 2. Fruit. Topics: relation of flower to fruit and seed; typical fruits; dispersal of seeds.

V. Taxonomy.—Topics: familiar types, representing at least ten of the large families of flowering plants, should be selected, and the characteristic features observed, unessential details being passed over. Such work incidentally involves the use of the manual. It should be understood, however, that the object of this work is not to develop complete knowledge of the structures of these groups, but rather to enable the student to recognise important plant families in the laboratory and in the field.

VI. Cryptogams.—Topics: suggested types will be found in the list of material. The name of each type will itself suggest the method of study to be followed.

VII. Ecology.—Topics: reference to preceding topics will make it clear that the relation of plants to their environment may be made a subject of frequent and profitable study. All the facts learned through the course should be brought together at the close and given their broadest insigficance, to the end that the student may be trained in the practice of interpreting facts, and that he may recognise the inherent unity of the science of botany.

Suggested List of Material in Botany.

I. Seeds and Seedlings.—Bean, pea, morning-glory, castor bean, pumpkin, barley, sunflower, corn, pine, peanut, windsor bean. II. Root.—Cherry, apple, turnip, carrot, parsnip, corn, ivy, spiderwort, oat, radish, barley, sunflower, duckweed, water-hyacinth, willow. III. Shoot.—1. Stem. Horse-chestnut, beech, hickory, magnolia, apple, locust, osage-orange, cat-brier, corn, ivy, grape, woodbine, vetch, hop, iris, sedge, potato, hyacinth, onion, gladiolus. 2. Bud. Horse-chestnut, beech, apple, cherry, hickory, magnolia, geranium, ailanthus, boxelder, butternut, sumach, sassafras, bryophyllum. 3. Leaf. Horse-chestnut, hickory, beech, apple, rose, elm, laurel, maple, locust, pea, mullein, dandelion, grass, corn, Solomon's seal, thistle, pine, clover, nasturtium, hydrangea, India-rubber plant, house-leek, loosestrife, bed-straw, pitcher plant, sundew, cactus, Venus' fly-trap. IV. Flower and Fruit.—1. Flower. Trillium, buttercup, sweet-pea, apple, cherry, Weigela, hepatica, jack-in-the-pulpit, anemone, columbine, narcissus, adder's tongue, cinque-foil, strawberry, violet, wild pink, azalea, arbutus, cranesbill, marsh marigold, blackberry, malva rotundifolia, pine, mountain laurel, white daisy, jewel weed, butter and eggs, ox-eye daisy, bachelor's button, evening primrose, mint, golden rod, chrysanthemum, gentian, syringa, bouvardia, lupine. 2. Fruit. Maple, elm, linden, pine, cockle-burr, beggar's-ticks, stick-tights, dock, chestnuts, locust, pea, bean, peanuts, sensitive partridge pea, dandelion, milkweed, ailanthus, acorn, oats, wheat, monkshood, poppy, lotus, witch-hazel, garden balsam, fleshy fruit. V. Taxonomy. VI. Cryptogams.—Pleurococcus, Hæmatococcus, Sphærella; yeast; Bacteria; Spirogyra; Zygnema; Mucor, Rhizopus; Fucus; edible fungi and fungi injurious to vegetation; moss, fern, Equisetum

Second

Second Half (Term II).

ZOOLOGY.

Required topics: I, II, III, IV, V, VI. Optional topics: VII, VIII, IX, X, XI, XII. For first year pupils the study of zoology and physiology should include such simple chemical and physical experiments as are necessary for the understanding of animal life.

I. Anthropoda.—1. Crustaceans. Topics: External and internal morphology; high specialisation in appendages; inherent similarity of parts of appendages; development and metamorphosis; protective coloration; economic intetests. 2. Insects. Topics: External morphology; habits of living; metamorphosis; cross pollination of flowers; protective coloration; economic entomology; principles of classification in zoology, illustrated by a brief comparison of insect orders; distribution. 3. Spiders. Topics: Structural characteristics; web building; capturing of prey; care of young.

II. Amphibians.—Topics: External and internal morphology; development and metamorphosis; protective coloration; habits of living in larval and adult form; distribution.

III. Coelenterata.—Topics: Radial symmetry; allternation of generations (in Hydrozoa); formation of coral (in Actinozoa); simple digestive cavity; budding; protective cells; adaptations to sessile life.

IV. Protozoa.—Topics: Structure and activity of protoplasm; ingestion; digestion, assimilation, excretion, respiration, locomotion, reproduction; the cell as a structural and a physiological unit.

V. Birds.—Topics: External and internal anatomy; seasonal colouring; migrations; nest-building; song; care of young; economic relations.

VI. Mammals.—Topics: Structure; specialisation in structure and in habits; instinct and reason; care of young; geological development.

VII. Mollusca.—Topics: General arrangement of organs; special activities; adaptation to surroundings; economic importance.

VIII. Fishes.—Topics: Arrangement of internal organs; exoskeleton and endoskeleton; adjustment between structure and function; distribution; fishery industry.

IX. Annulata.—Topics: Bilateral symmetry; segmentation; general anatomy; activities; regeneration; parasitism in allied forms; economic interests.

X. Echinodermata.—Topics: Structure; development and metamorphosis; differentiation into tissues (ectoderm and entoderm); habits of obtaining food; locomotion; adaptations for protection.

XI. Porifera.—Topics: Beginning of differentiation in cell structure; sessile habit; incurrent and excurrent openings; skeleton; sexual reproductive cells; economic interests.

XII. Reptiles.—Topics: Morphology; exoskeleton and endoskeleton; relationship to other vertebrates; harmless and injurious forms; habits; distribution

NOTE.—The material of the appropriate groups should be used for illustrative purposes in comparative study in connection with human physiology.

Suggested List of Material in Zoology.

I. Anthropoda.—(1) Crustaceans. Crayfish, lobster. (2) Insects. Grasshopper, cricket, cockroach, dragon fly, caddis-fly, cicada, plant-louse, squash bug, house-fly, mosquito, butterfly, moth, beetle, bee, ant, gall-fly. (3) Spiders.—Garden spider, house spider. II. Amphibia.—Frog, toad, salamander. III. Coelenterata.—Sea-anemone, Hydra, hydroid, medusa, Scyphozoa. IV. Protozoa.—Paramœcium, Vorticella, Stentor, Stylonichia, Didinium, Euglena, Amœba. V. Birds.—Any bird. VI. Mammals.—Any mammal. VII. Mollusca.—Clam, mussel, snail, slug, squid. VIII. Fishes.—Any bony fish. IX. Annulata.—Earthworm, sandworm (Nereis). X. Echinodermata.—Starfish and sea-urchin. XI. Porifera.—Grantia, Spongilla, commercial sponges. XII. Reptiles.—Turtle, snake, lizard.

FOURTH YEAR (ELECTIVE).

The syllabus of the elective work in biology for this year of the curriculum shall correspond to the requirements outlined by the College Entrance Examination Board.

PHYSIOLOGY,

Second Half (Term II).

This subject is to be studied during the term as part of the work in zoology.

I. Introductory; man's place among the animals; general composition of the body; general survey of organs and tissues.

II. Study of foods and nutrition as the source of physiological energy.

III. Study of the structure, functions, and hygiene of the skeleton, the muscles, the digestive organs, the circulatory organs, with the composition of blood and lymph; the respiratory organs; the kidneys and skin; the nervous system and special senses. Effects upon these of alcohol and narcotics.

SYLLABUS FOR HIGH SCHOOLS, THE CITY OF NEW YORK.

PHYSICS AND CHEMISTRY.

SYLLABUS IN PHYSICS.

I. The general plan and scope of the work in physics, in the third year of the high school, conforms to the syllabus of the College Entrance Examination Board, and includes:—

1. Individual laboratory work comprising at least thirty-five exercises selected from a list of sixty or more, not very different from the list given below.
2. Instruction by lecture-table demonstrations, to be used mainly as a basis for questioning upon the general principles of physics and their applications.
3. Study of at least one standard text book, supplemented by the use of many and varied numerical examples, "to the end that the pupil may gain a comprehensive and connected view of the most important facts and laws of elementary physics."

II. So much of the syllabus as relates to mechanics (including hydrostatics and pneumatics), and sound, is designated as the work of the first half year (Term V), and heat, light, magnetism, and electricity as the work of the second half year (Term VI).

LIST OF EXPERIMENTS.

Mechanics and Hydrostatics.

1. Weight of unit volume of a substance. 2. Lifting effect of water upon a body entirely immersed in it. 3. Specific gravity of a solid body that will sink in water. 4. Specific gravity of a block of wood by use of a sinker. 5. Weight of Water displaced by a floating body. 6. Specific gravity by flotation method. 7. Specific gravity of a liquid—two methods. 8. The straight lever—first class. 9. Centre of gravity and weight of a lever. 10. Levers of the second and third classes. 11. Force exerted at the fulcrum of a lever. 12. Errors of a spring balance. 13. Parallelogram of forces. 14. Friction between solid bodies on a level. 15. Coefficient of friction by sliding on incline.

Light.

16. Use of photometer. 17. Images in a plane mirror. 18. Images formed by a convex cylindrical mirror. 19. Images formed by a concave cylindrical mirror. 20. Index of refraction of glass. 21. Index of refraction of water. 22. Focal length of a converging lens. 23. Conjugate foci of a lens. 24. Shape and size of a real image formed by a lens. 25. Virtual image formed by a lens.

Mechanics.

Mechanics.

26. Breaking-strength of a wire. 27. Comparison of wires in breaking tests. 28. Elasticity: stretching. 29. Elasticity: bending; effect of varying loads. 30. Elasticity: bending; effect of varying dimensions. 31. Elasticity: twisting. 32. Specific gravity of a liquid by balancing columns. 53. Compressibility of air: Boyle's law. 34. Density of air. 35. Four forces at right angles in one plane. 36. Comparison of masses by acceleration test. 37. Action and reaction: elastic collision. 38. Elastic collision continued: inelastic collision.

Heat.

39. Testing a mercury thermometer. 40. Linear expansion of a solid. 41. Increase of pressure of a gas heated at constant volume. 42. Increase of volume of a gas heated at constant pressure. 43. Specific heat of a solid. 44. Latent heat of melting. 45. Determination of the dew-point. 46. Latent heat of vaporisation.

Sound.

47. Velocity of sound. 48. Wave-length of sound. 49. Number of vibrations of a tuning-fork.

Electricity and Magnetism.

50. Lines of force near a bar magnet. 51. Study of a single-fluid galvanic cell. 52. Study of a two-fluid galvanic cell. 53. Lines of force about a galvanoscope. 54. Resistance of wires by substitution: various lengths. 55. Resistance of wires by substitution: cross-section and multiple arc. 56. Resistance by Wheatstone's bridge: specific resistance of copper. 57. Temperature-coefficient of resistance in copper. 58. Battery resistance. 59. Putting together the parts of a telegraph key and sounder. 60. Putting together the parts of a small motor. 61. Putting together the parts of a small dynamo.

At the time of the examination the candidate must present a note-book in which he has recorded the steps and the results of his laboratory exercises, and this note-book must bear the endorsement of his teacher, certifying that the notes are a true record of the pupil's work. It should contain an index of the exercises which it describes.

Syllabus in Chemistry.

The course in chemistry for the fourth year conforms to the syllabus of the College Entrance Examination Board.

The following outline includes only the indispensable things which must be studied in the class-room and laboratory. The material is, for the most part, common to all elementary text-books and laboratory manuals. Each book makes its own selection of facts which may be necessary for the illustration of the principles of the science. The order of presentation will naturally be determined by each teacher for himself.

Outline:—The chief physical and chemical characteristics, the preparation and the recognition of the following elements and their chief compounds: *oxygen, hydrogen, carbon, nitrogen, chlorine, bromine, iodine, fluorine, sulphur*, phosphorus, silicon, potassium, *sodium*, calcium, magnesium, *zinc*, copper, mercury, silver, aluminium, *lead*, tin, *iron*, manganese, chromium.

More detailed study should be confined to the italicised ELEMENTS (as such) and to a restricted list of compounds, such as: water, hydrochloric acid, carbon monoxide, carbon dioxide, nitric acid, ammonia, sulphur dioxide, sulphuric acid, hydrogen sulphide, sodium hydroxide.

Attention should be given to the atmosphere (constitution and relation to animal and vegetable life), flames, acids, bases, salts, oxidation and reduction, crystallisation, manufacturing processes, familiar substances (illuminating gas, explosives, baking powder, mortar, glass, metallurgy, steel, common alloys, porcelain, soap).

Combining proportions by weight and volume; calculations founded on these and Boyle's and Charles' laws; symbols and nomenclature (with careful avoidance of special stress, since these are non-essential); atomic theory, atomic weights and valency in a very elementary way; nascent state; natural grouping of the elements; solution (solvents and solubility of gases, liquids and solids, saturation); ionization; mass action and equilibrium; strength (= activity) of acids and bases; conservation and dissipation of energy; chemical energy (very elementary); electrolysis. Chemical terms should be defined and explained, and the pupil should be able to illustrate and apply the ideas they embody. The theoretical topics are not intended to form separate subjects of study, but to be taught only so far as is necessary for the correlation and explanation of the experimental facts.

The facts should be given as examples from various classes, and not as isolated things. Thus, to speak of a "standard method of preparing hydrogen," whereby the action of zinc on hydrochloric acid is meant, shows narrow and infertile teaching. It should be shown that all acids are acted upon by a certain class of metals to produce hydrogen. Examples of both classes of metals should be given and the general principles derived. The reason for using zinc and hydrochloric acid in the laboratory can then be stated.

It is recommended that the candidate's preparation in chemistry should include:

1. Individual laboratory work, comprising at least forty exercises selected from a list of sixty or more, not very different from the list given below. 2. Instruction by lecture-table demonstrations, to be used mainly as a basis for questioning upon the general principles of chemistry and their applications. 3. The study of at least one standard text-book to the end, that the pupil may gain a comprehensive and connected view of the most important facts and laws of elementary chemistry.

In general, the work of the first half-year (Term VII) should include a study of the laws of chemical combination, as illustrated by the non-metallic elements and their simpler compounds. The second half-year (Term VIII) should include a systematic study of the metallic elements, their compounds, and such compounds of carbon as are mentioned in the syllabus.

The course in the second year (elective) should follow the general plan of the work of the fourth year, but the work is more elementary and restricted; it should include at least thirty laboratory exercises.

List of Experiments.

General.

1. Composition of the atmosphere. 2. Dissociation of mercuric oxide, and study of resulting products. 3. Burning of magnesium, sodium and potassium in air, and of iron in oxygen, with a study of resulting products. 4. Combination of substances produced in (3) with water, and study of results. 5. Burning of sulphur and phosphorus in air; study of products. 6. Combination of substances produced in (5) with water; study of products. 7. Treatment of substances resulting from (3) and (4) with hydrochloric acid, and examination of final products.

Laws of Gas Volumes and Vapour Tension.

8. Boyle's Law. 9. Charles' Law. 10. Vapour tension as related to temperature.

Common Elements and Compounds.

11. Preparation and study of oxygen. 12. Weight of a litre of oxygen under standard conditions. 13. Preparation of hydrogen by action of sodium on water. Careful study of by-product. 14. Preparation of hydrogen by zinc and acid. More thorough study of hydrogen in larger quantities; study of by-product. 15. Weight of a litre of hydrogen under standard conditions. (Optional for best students only). 16. Proportion by volume in which hydrogen and oxygen unite. (Lecture demonstration with eudiometer). 17. Proportion by weight in which hydrogen and oxygen combine. 18. Study of boiling point, freezing point, action on litmus, and taste of substance produced by combining oxygen and hydrogen. 19. Electrolysis of water, resulting gases being accurately measured and tested. 20. Vapour density of water; conclusion as to formula for water. (Optional for best pupils). 21. Study of sodium, potassium, lithium, strontium, calcium, and barium compounds. Detection of presence of these metals by flame test and by spectroscope. 22. Study of salts of cobalt,

copper,

copper, nickel, manganese, chromium, iron. Tests for these metals and those mentioned in (21) in unknown mixtures. 23. Study of compounds of aluminium, magnesium and zinc. Tests for these in mixtures of (21) and (22). 24. Tests for silver, lead and bismuth in unknown mixtures of (21), (22) and (23). 25. Tests for mercury and arsenic in unknown mixtures of (21), (22), (23) and (24). 26. Preparation and study of chlorine gas. 27. Weight of a litre of chlorine. 28. Combustion of chlorine in hydrogen. 29. Preparation of hydrochloric acid and study of properties. 30. Decomposition of hydrochloric acid gas by sodium amalgam, and conclusions as to percentage composition. Avogadro's law. 31. Preparation and study of at least three chlorides. 32. Preparation and study of bromine. 33. Preparation of at least three bromides. 34. Preparation and study of iodine. 35. Preparation of at least three iodides. 36. Comparative study of the chemism of chlorine, bromine and iodine by mutual displacement. 37. Study of hydrofluoric acid and fluorides. 38. Determination of the combining proportion of chlorine and zinc, and of the atomic weight of zinc. 39. Atomic weight of zinc from specific heat. Law of Dulong and Petit. 40. Atomic weight of silver by displacement of zinc. 41. Study of forms of sulphur. 42. Direct formation of sulphides. 43. Study of sulphurous oxide. 44. Preparation of sulphurous and sulphuric acids. 45. Preparation of at least two sulphites and two corresponding sulphates. Comparative study of these. 46. Decomposition of ammonium nitrate and study of nitrous oxide. 47. To determine the composition of nitrous oxide. Gay-Lussac's Law. 48. Preparation and study of nitric acid. 49. Preparation of three nitrates in three different ways. 50. Composition of gas formed by action of cold dilute nitric acid on copper. 51. Composition of gas formed by union of nitric oxide and oxygen. 52. Preparation of chromic anhydride, chromic acid and potassium chromate. 53. Changing potassium chromate to potassium bichromate and back again. Oxidation and reduction in solutions. 54. Chromium as an acid-forming and as a base-forming element. Preparation of chromium sulphate. 55. Preparation of ferrous and ferric salts.

Carbon and some Carbon Compounds.

56. Product of burning charcoal. Tests. 57. Test for presence of carbon in wood, paper, kerosene, coal-gas, alcohol. 58. Preparation of three carbonates. 59. Solubility of carbonates in the presence of carbon dioxide. 60. Effect of heat on suspension of carbonates in solution. 61. Carbon dioxide from fermentation. 62. Alcohol from fermentation. 63. Preparation of ether by alcohol and sulphuric acid. 64. Preparation of alkaline salts of fatty acids, or soap-making.

At the time of the examination the candidate must present a note-book in which he has recorded the steps and the results of his laboratory exercises, and this note-book must bear the endorsement of his teacher, certifying that the notes are a true record of the pupil's work. It should contain an index of the exercises which it describes.

The courses of study in the Central High School, Springfield, Massachusetts, are as follow:—

CENTRAL HIGH SCHOOL, SPRINGFIELD, MASSACHUSETTS.

Common Course of Study for the First Year: English, History, Biology (every other day); Algebra, Latin or French or German (four or five* periods a week.)

In the first year at the central high school one course of study is offered to all pupils, the choice of a course of study being left until the beginning of the second year. In this Freshman year the studies are nearly all required; every pupil must study English (every other day), History (every other day), Algebra (four or five* periods a week), and Biology (every other day). Instead of the Freshman Biology a pupil may study elementary Physics (four periods a week), which usually comes in the Sophomore year, by obtaining the consent of the principal. If a pupil knows that he will enter Harvard College, he should substitute Physics for Biology in this year. A choice of foreign languages must be made by every Freshman. Those who may later decide to prepare for a higher institution (a college, technical school, or a normal school), and certainly all who have already formed such intention should choose Latin; Latin must be studied four years in preparation for any advanced study, and should be chosen, if at all, in the first year. The modern languages may be chosen in the subsequent years. Those who intend to select the Commercial Course next year are advised to take French or German instead of Latin. The studies of the Freshman year are selected for disciplinary value in preparation for the studies of following years. After the choice of a course in the Sophomore year a large liberty in the election of studies is allowed.

The school work is divided into twenty-six periods a week. The above common course of study requires fifteen prepared recitations a week of every pupil, and on alternate weeks sixteen prepared recitations. (If Physics be substituted for Biology, seventeen prepared recitations will be required every week). Eleven or ten periods respectively on alternate weeks are left free for study (nine for those who study Physics).

Pupils who can comfortably do extra work may, with the permission of the principal, pursue an elective subject during the first year. An elected subject must be continued throughout the year. The principal, however, may require a pupil to discontinue an elective subject provided the pupil is not passing in other studies, and needs time for unprepared recitation or study. The elective subjects are: Freehand drawing (every other day), Art Talks (one period a week), Mechanical drawing (five periods a week), Music (one period a week), Music Analysis (two periods a week), Harmony (two periods a week). In preparation for a State normal school, either freehand drawing or music should be elected, if any extra work is taken. To prepare for a technical school elect mechanical drawing. The music (1) is chorus singing, under the instruction of the supervisor of music. The music analysis (2) is training in the understanding and appreciation of different forms of composition and of the styles of different composers; it is largely a training in how to listen to music. No prepared work is required in connection with an elective subject, except in the case of the Art Talks and of Harmony. In the Art Talks pupils are expected to keep a careful record of the material presented in the lectures. These lectures relate to the work of various schools of art.

Harmony consists of a study of the scientific principles of musical composition.

Courses of Study for the Second Year.

At the close of the Freshman year a choice of the following courses must be made: General, College Preparatory, and Commercial.

In each course there are required optional and elective subjects.

Pupils shall be required to make a list of their studies for the following year at the beginning of the summer term (usually the first week of May). This list shall be approved and signed by the principal and parent or guardian. The minimum number of recitations a week for a Sophomore shall be fifteen, of which thirteen, at least, must be prepared exercises. Every pupil is strongly warned against the danger of choosing his subjects at haphazard, as chance or caprice may direct. Students are to feel free to talk with teachers and principal, who will gladly give helpful suggestions.

The General Course is designed particularly for those who are not going beyond the high school. Great freedom of election is allowed in this course. The optional subjects are, Physics or Geometry (4), Latin (5), Greek (4), French or German (5), General History (4), and Harmony (2). The required studies are Rhetoric and American Literature (every other day), Physics or Geometry (4).

The students who are to enter a State normal school or a technical school should select this course. A pupil who may enter a normal or training school is advised to take Rhetoric and American Literature (5), Latin (5), and two of the following studies: Geometry (4), Physics (4), General History (4); the one of these last three studies not taken now should be taken the following year. If extra work is possible, elect freehand drawing or music, or both.

For a technical school it is advised that Rhetoric and American Literature (5), Geometry (4), and either Physics (4) or a Modern Language (5), or both, be taken. Mechanical Drawing should be elected.

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* An extra period of unprepared recitation is required of those who for any reason fall below the standard o satisfactory work in Algebra, Latin, French, or German.

The College Preparatory Course is designed especially with a view to prepare pupils for literary or classical courses in college. If there is any possibility that a college course may be taken later, select this course. Students should early in their course make a study of the requirements for admission to the college they expect to enter. It is very important that the choice of college be made early. The required studies of this course are Rhetoric (every other day), Latin (5), Geometry (4). In preparation for the colleges for young men Greek should be elected (4). Candidates for colleges which require three foreign languages may find it necessary to begin the study of two foreign languages this year. Five periods each of French and German are offered. In preparation for the colleges for women, choice may be made between three years' study of Greek, French, or German, according to the course, either classical or literary, that they wish to enter upon.

Electives for both the above courses are the same: Freehand Drawing (every other day), Art Talks (1), Mechanical Drawing (5), Music Analysis (2), Music (1), and Harmony (2).

The Commercial Course is designed to prepare the pupil for an enjoyable and profitable business life. The course is not an easy one. The required subjects are: English (5); Civics (every other day); *Bookkeeping and Business Practice (5), or *Stenography (5) and Typewriting (every other day); Business Correspondence (1) and Commercial Arithmetic (3); Penmanship and Spelling (every other day). Students of this course are allowed less freedom of election, in order that they may thoroughly master the branches necessary to a proper preparation for business life. Elective subjects are to be taken only in rare cases. These elective subjects are: French or German (5), General History (4), Freehand Drawing (every other day), Art Talks (1), Music Analysis (2), Music (1), and Harmony (2).

Courses of Study for the Third Year.

At the beginning of the summer term (usually the first week of May) pupils shall be required to make a list of their studies for the following year. This list shall be approved and signed by the principal and the parent or guardian. The minimum number of recitations a week for a Junior shall be sixteen, of which fourteen, at least, must be prepared exercises.

In the General Course English Literature (5) is the required subject. The optional subjects are: Chemistry (4), Higher Algebra and Solid Geometry (5), Latin (5), Greek (5), French or German (4 or 5), Modern History (4), Freehand Drawing (5—double periods), Mechanical Drawing (5—double periods), and Harmony (2).

In selection of subjects the student is strongly advised to continue the branches pursued in the Sophomore year. Juniors who need guidance are to consult their parents, their recitation and room teachers, and the principal. In special cases it may be necessary for the principal to refuse to approve the choice made.

Those students who are fitting for a technical school are advised to take College Literature (every other day), Higher Algebra and Solid Geometry (5), French or German (4 or 5), (or, if begun in Sophomore year, a continuation of the same language). A second Modern Language may be taken, or Chemistry (4). Mechanical Drawing (5) may be elected. At the time of deciding on your list of studies, make a list of subjects in which preliminary examinations are to be taken the following June. Algebra, Plane Geometry, Solid Geometry, and either French or German, may well be passed off at the preliminary examination. American History may be reviewed and passed off also.

Those who are fitting themselves for a State normal school are advised to take College Literature (every other day), Chemistry (4), Latin or a Modern Language (5), Freehand Drawing or Music, or both. American and English History should be reviewed. Determine at the beginning of this year the studies which you intend to offer for admission to a State normal school.

The College Preparatory Course requires of everyone College Literature (every other day), Latin (5), Higher Algebra (every other day), Ancient History (every other day), and either Greek (5) or French or German (5).

Those who are going to Harvard are advised to take Harvard Physics this year, if it is offered; if not, or if the candidate's programme of study will not allow it, Solid Geometry may be taken. Candidates for both Yale and Harvard are advised to take preliminary examinations in June of this year. Lists of subjects for preliminary examinations should be made out and submitted to the principal before making out a list of studies for the Junior year.

Admission to Harvard College may be according to four plans, but candidates are advised to select one of the two following plans: (a) All the elementary studies, and at least *two* advanced studies. (b) All the elementary studies except either German or French, and at least *three* advanced studies. Preliminary examinations are usually taken in elementary Greek, elementary Latin, either beginning French or German, History of Greece and Rome, Algebra, and Harvard Physics. Plane Geometry is reviewed in the Senior year, and may well be left for the final examination. The advanced studies usually offered are Latin and Greek, and, in case a third is required, an advanced Modern Language may be taken, or Greek and Latin Composition. Trigonometry and Solid Geometry may be offered as one of the advanced studies, or as an "extra."

For Yale, preliminary examinations are usually taken in English (a) (College Literature of Junior year), Xenophon, Roman History, Greek Grammar, Algebra (a) and (b), Cæsar and Nepos, Cicero, Greek History, Latin Grammar, Ovid at sight, Greek at sight. (See Yale catalogue.) Final examinations would be taken a year later in: Greek Composition, Virgil and Prosody, English (b), Homer, Geometry (a) and (b), Latin Composition, French or German.

Candidates for Amherst College, classical course, are advised and encouraged by the college authorities to take either French or German in addition to the language work in Latin and Greek that is required. Brown University requires this.

Candidates for Wellesley College must apply one year before entering. It is wise to do this for entrance to Mt. Holyoke and Smith College.

The usual electives are offered in both the above courses, and, in addition, Cooking (Fridays, 1·15–3·15), which counts as one recitation in making up the programme.

The Commercial Course requires English and Literature (4); Economics (every other day); Advanced Bookkeeping and Banking (5), or Stenography (5) and Typewriting (5); Office Work and Correspondence (2); Commercial Law and Commercial Geography (4); Penmanship (1). The electives are Chemistry, French or German, Modern History.

Courses of Study for the Fourth Year.

At the beginning of the summer term (usually the first week of May) pupils shall be required to make a list of their studies for the following year. This list shall be approved and signed by the principal and the parent or guardian. The minimum number of recitations a week for a Senior shall be seventeen, of which fifteen, at least, must be prepared exercises.

The General Course requires English Literature of everyone. The optional subjects are: Advanced Biology (4), Advanced Physics (4), Advanced Chemistry (4), Astronomy and Physiography (4), Political Science (4), Mathematical Reviews (2½), Trigonometry and Analytical Geometry (5), Latin, French, or German (5), Freehand Drawing (5) (double periods), Mechanical Drawing (5) (double periods), and Harmony (2).

The candidates for a technical school are advised to take College Literature and Mathematical Reviews, to continue the Modern Language already begun, and to begin a second language, unless two languages have already been pursued; to elect Mechanical Drawing and to review American History. In some cases it might be desirable to take Trigonometry and Analytical Geometry (5).

Candidates for a State normal school should take College English and Mathematical Reviews (5), Political Science (4), Astronomy and Physiography (4), possibly a foreign language, and Freehand Drawing or Music, or both.

The College Preparatory Course requires College English and Mathematical Reviews (5), Latin (5), and a third year of Greek or of a Modern Language (5). Advanced Physics (4), and Trigonometry and Analytical Geometry (5) are also offered.

For several of the colleges one year of Modern Language is required, in addition to the two ancient languages.

Candidates for Vassar should review thoroughly American and English History; for Cornell, Physiology and American and English History; for Mt. Holyoke, Botany and Physics. The

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* Both may be taken, and, if any extra work is done, this is advised.

The courses of study in the Detroit High Schools,—three in number—and a description of the courses are as follow:—

COURSE OF STUDY IN THE DETROIT HIGH SCHOOLS.

9 B.	9 A.	10 B.	10 A.	11 B.	11 A.	12 B.	12 A.
ENGLISH (1).....4	ENGLISH (2) 4	ENGLISH (3).. ..4	ENGLISH (4) 4	ENGLISH (5).....2	ENGLISH (6).....2	ENGLISH (7).....2	ENGLISH (8) 3
ALGEBRA (1) 5	ALGEBRA (2) 5		ALGEBRA (3) 5	GEOMETRY (1)....5	GEOMETRY (2)....5	PHYSICS (1) 5	PHYSICS (2) 5
HISTORY (1).....4	HISTORY (2) 4						
		Arithmetic (1)..5				Geometry (3) 2½	Trigonometry (1) 4
		History (3) 4	History (4) 4	History (5) 4	History (6) 4	History (7) 4	History (8) 4
							Algebra (4) 2½
Latin (1) 5	Latin (2) 5	Latin (3) 5	Latin (4) 5	Latin (5) 5	Latin (6) 5	Latin (7) 5	Latin (8) 5
French (1) 5	French (2).....5	French (3).. ...5	French (4).....5	French (5) 5	French (6) 5	French (7) 5	French (8) 5
German (1).....5	German (2) 5	German (3) 5	German (4) 5	German (5).....5	German (6).....5	German (7).....5	German (8).....5
			Greek (1) 5	Greek (2).....5	Greek (3) 5	Greek (4).....5	Greek (5).....5
				German (1a) 5	German (2a) 5	German (3a) 5	German (4a) 5
				French (1a).....5	French (2a).....5	French (3a).....5	French (4a).....5
		Botany (1).....5	Botany (2).....5				
Geography (1) ..4	Geography (2) ..4	Zoölogy (1) 5	Zoölogy (2) 5	Chemistry (1)....5	Chemistry (2)....5	Literature (1)....4	Literature (2)....4
			Physiology 5	Typewriting (1)..2½	Typewriting (2)..2½		
Book-keeping (1) 5	Book-keeping (2) 5	Book-keeping (3) 5	Book-keeping (4) 5	Com. Geog. or Civics 5	Com. Law (5)....5	Economics (1)....5	Reviews 5
		Phonography (1) 5	Phonography (2) 5				
Drawing (1) 5	Drawing (2) 5	Drawing (3) 5	Drawing (4) 5	Phonography (3) 2½	Phonography (4) 2½	Phonography (5) 2½	Phonography (6) 2½

The number of hours required for graduation is 142.

The subjects printed in small capitals, making a total of 67 hours, are required. From the optional studies 75 hours must be elected.

Students preparing for college should arrange their work so as to meet the requirements for admission.

Students electing a study running through a year must complete the year's work in that study before any credit is given.

The number in parenthesis, following the name of each study, indicates the number of the course in that study.

The number opposite the name of the study, at the right of the column, indicates the number of recitations per week, in that study.

DESCRIPTION OF THE COURSES.

MATHEMATICS.

Algebra.

Course (1).—This course involves work in the four fundamental operations, simple equations and problems not involving fractions, factoring, highest common factor and lowest common multiple by one method only, and the five reductions of fractions. Some effort is made to sketch in broad and simple lines the main facts in the history of the development of algebra from earliest times. One constant aim of this course is to make the pupil see how one subject grows from a preceding, and to encourage him to use facts already in his possession in the solution of the new or unknown. This ability to attack the unknown is considered one the surest signs that a pupil is not doing work mechanically. Great attention is given to the subject of factoring as forming an indispensable foundation for all successful work in the following courses.

Course (2).—Finish subject of fractions. This course involves the study of fractional equations, elimination, involution, evolution, theory of exponents, radicals, and equations involving radicals. The two most difficult parts of this course are "theory of exponents" and radicals. In these much effort is put forth to make the student see for himself the necessity of extending our idea of exponent to include all possible forms; also to prove that all laws governing the use of positive integral exponents apply as well to other exponential forms. It is desirable that in this course much facility should be acquired in the use of radicals.

Course (4).—Two and a half hours.

Course (5).—Two and a half hours.

Part of the work of these courses is a review, with more attention to the demonstration of principles and a fuller treatment of the subjects studied than is given in the earlier courses. The aim is to enable the pupil to acquire readiness in the use of algebraic processes, and at the same time to give him some training in mathematical reasoning.

Course (4) begins with factoring, and extends through the theory of exponents.

Course (5) begins with radicals, and concludes with the binomial theorem.

Trigonometry.

Trigonometry. Course (1). Four hours.—This course is a study of plane trigonometry, including the analytical treatment of functions of angles and the solution of triangles. Text-book, Plane Trigonometry—Lyman and Goddard.

Arithmetic.

This subject is intended to furnish work in numbers necessary for admission to either college or scientific school, or for entrance into business. An elementary knowledge of algebra is assumed to have been acquired by the student. The principles of arithmetical operations are expounded, as far as possible, by means of literal analysis.

Course (1).—"Hints and Definitions" on fundamental principles—note-book work; analytic work in fractions, decimals, measures, denominate numbers, metric system, involution and evolution, mensuration through plane figures.

Course (2).—Percentage, interest, discount, exchange, equation of payments, stocks and bonds, ratio and proportion, partnership, progressions, mensuration through solids.

Geometry.

The work of geometry covers Milne's Plane and Solid Geometry. Five lessons per week during three semesters are devoted to it. The work of the first semester includes Books I, II, and III; and in the second semester plane geometry is completed. The third semester is devoted to solid geometry, including spherical geometry. The immediate object of the course is to train the pupil to follow and reproduce rigid demonstrations of the propositions given in the book, and to apply these in the solution of a large number of original exercises, including the demonstration of new theorems, constructions, and the solution of problems of mensuration. Educationally, the aim of the work is to develop in the pupil as much power as possible in close and continued reasoning.

SCIENCES.

Physiography.

Course (1).—The following subjects are taken up the first semester:—1. The earth as a globe—form, size, and motions. 2. General circulation of winds; study of pilot charts, weather maps, and weather prediction. 3. Waves, tides, currents.

Course (2).—This course is the continuation of that given the first semester. It consists of recitations, laboratory, and field work. The subjects treated are the following:—1. Physical features of the lands. 2. Classification of land forms. Forms due to movement of the earth's crust. Processes of land sculpture. Stages of sculpture, young, mature, and old forms. 3. Geographical control of the distribution of plants and animals. 4. Geographical factors in the history of man.

Biology.

Biology.

To become more familiar with living things, their part and place in nature, to cultivate habits of careful observation, reflection, and inference, these are the two main objects in the teaching of the biological studies—botany, zoology, and physiology. They come regularly in the second year of the High School course. One year of botany, one year of zoology, and one half-year of physiology are offered. It is desirable to elect a whole year of botany or zoology; but the first course in each subject may be taken, both being equivalent to a year's work. For each course there is the equivalent of two recitation hours daily during the semester. The greater part of the work is done in laboratory rooms, but whenever the season is favourable field excursions are planned, with a view of bringing the student in contact with plants in their natural surroundings. Each student is provided with specimens for study, and a set of directing questions to lead him to the observation of important facts. These, with the conclusions drawn from them, are embodied in descriptions and illustrated with drawings. When the study of a subject, or several related subjects, is completed, recitations are held for better understanding the underlying principles. In each subject experiments are made from which the student infers the life processes going on in the organs of plants and animals. Besides, experiments are found valuable for training and for impressing facts and principles.

BOTANY.

Course (1) takes up the life-history of seed plants. It usually begins with the study of the plant as a whole, to familiarise the student with the simplest notions of plant organs. As flowers are more abundant in autumn than later in the semester, these are first taken up, and then some common plants are traced, principally to convey the idea of relationship among plants, and to give the student a chance to learn about the local flora. The fruit follows as the ripened parts of the flower. The next in order are seeds, seedlings, roots, stems, buds, branches, and leaves, thus returning to the flower that part of the life-history of the plant from which the start was made. The latter is very nearly the order for the second semester, as wild flowers are abundant towards its close. The student is encouraged to see as much as possible with unaided eyes, before using either magnifier or microscope. The latter is not used individually by students in this course, but on occasion they are shown characteristic plant cells under the compound microscope.

Course (2) includes a brief review of Course (1), after which the study is pursued mainly with the compound microscope, taking up the following subjects: The cell, cell contents, cell divisions, and cell combinations or tissues. Then the structure and life habits of the lower forms of plants are studied from the unicellular through more complex forms, using the representative types of algae, bacteria, fungi, mossworts, mosses, and ferns. This brings out the relation of the lower groups of plants to the flowering plants which were studied in Course (1). A special feature of this course is the field work.

ZOOLOGY.

The two courses in Zoology are not numerically indicated, but are known as Invertebrate and Vertebrate courses, each giving five hours' credit. The Invertebrate course begins in September. Animals without backbones are studied in regard to habits, homes, general structure, uses of organs, means of protection, and adaptation to their environment. The Vertebrate course is taken up in February, and the backboned animals are studied in the same manner as the invertebrates.

The laboratory is well equipped with dissecting and compound microscopes, which are used in both courses whenever needed. Aquarium and field study form part of the work. Recitations are supplemented by occasional reports from different pupils on zoological topics.

PHYSIOLOGY.

The course in Physiology includes the study of cells, tissues, muscles and their control (something of the nervous system and the skeleton), blood corpuscles, circulation, then the circulation as seen in some animal under the microscope; respiration, ventilation and heating, dust and bacteria (hygiene); excretion; foods and digestion; what to do in ordinary accidents. The study of each of these subjects is supplemented by laboratory work, parallel with them. Heretofore, about half of the course has been experimental. While, primarily, it is the learning of functions, as one of the biological sciences, physiology is taught as much for discipline as for the use it may be.

CHEMISTRY.

This study is taken up at the beginning of the third year of the high school course; that is, in the Eleventh Grade. It is intended that each student electing the subject shall pursue it for one year. Three periods are given to recitations, and two double periods to laboratory work each week. Much of the laboratory work is quantitative in character. There are two courses, each extending through a half year.

Course (1). This course includes a study of oxygen, hydrogen, nitrogen and its oxides, union by weight and volume, laws of definite and multiple proportions, carbon and its oxides, and the electro-chemical relation of elements. The general characteristics of acids, salts, and bases are taken up, and each of the more important acids and alkali bases is studied. The chemistry of the atmosphere, of water, and of the flame receives especial attention. The course ends with a study of the elements of the halogen group.

Course (2). This course is a continuation of Course (1), but is more rigidly quantitative, the students making use of fine chemical balances. It includes a study of the laws of volumetric proportions, vapour density, and equivalent weights. A brief study of the kinetic theory of gases, the periodic system and dissociation is attempted and a survey by families of the more common elements is made. The course is concluded by about six weeks of work in qualitative analysis.

PHYSICS.

Physics is pursued throughout the last year of the high school course, being required of all students for graduation. Four recitation periods are given to class-room work, and one double period to laboratory work each week. Much of the laboratory work is done in the afternoon out of regular school hours. About forty laboratory exercises of quantitative character are attempted during the year. Carhart and Chute's Physics and Adams' Physical Laboratory Manual are the text-books used. There are two courses, each extending through a half year.

Course (1) comprises the subjects: Properties of Matter, Mechanics of Solids, Mechanics of Fluids and Heat.

Course (2) covers the subjects: Electricity and Magnetism, Sound and Light.

Languages.

GREEK.

Outline of the work done in Greek:—

Course (1).—White's First Greek Book (42 lessons). Moss's Greek Reader.

Course (2).—White's First Greek Book (completed). Moss's Greek Reader.

Course (3).—Xenophon's Anabasis (through book 2, chapter 2). Woodruff (prose work corresponding to the reading in Xenophon).

Course (4).—Xenophon's Anabasis (through book 4; much of the last book at sight. Woodruff (through exercise 127, and selections from that portion based on book 3 of Xenophon). A thorough review of Goodwin's Grammar accompanies the reading of Xenophon.

Course (5).—Seymour's Homer's Iliad (books 1, 2, 3 and 6). Greek prose competition once a week (Higley).

LATIN.

Outline of the work done in Latin:—

Course (1).—The first forty chapters of Bellum Helveticum.

Course (2).—Bellum Helveticum through indirect questions.

Course (3).—Cæsar, book 1 (Helvetian War), book 2. Daily prose work based on selected portions of the text read. The principles of syntax especially emphasised are: participles, gerund, gerundive, supine, infinitive—in all its uses—pure purpose clauses, subordinate clauses in indirect discourse (connected prose), *ubi* and *cum* temporal clauses, partitive genitive, dative of purpose, passive periphrastic with the dative of agent.

Course

Course (4).—Cæsar, Books 3 and 4, and sight reading in portions of the remaining books. Cicero (the first oration against Catiline). Prose work as in course 3, the principles of grammar most emphasised being: review of all uses of the infinitive constructions, ablative of specification, ablative of quality, dative with compounds, and with adjectives, subjunctive of purpose (including substantive clauses), subjunctive of characteristic, *qui* causal and concessive, deliberative subjunctive, result clauses (all varieties).

Course (5).—Cicero, second, third, and fourth orations against Catiline and the oration for the Manilian Law. Prose composition, illustrating the following points of syntax: conditions, wishes, exhortations, commands, prohibitions, and deliberative subjunctive.

Course (6).—Ovid (1,500 lines). Cicero, the oration for the poet Archias.

Course (7).—Virgil's Æneid, first three books. The first twenty lessons in Jones' Exercises in Latin Prose Composition, with connected prose work in addition.

Course (8).—Virgil's Æneid, fourth, fifth, and sixth books. Cæsar, Book 1, chapters 30-54. Sight reading. The last twenty lessons in Jones' Exercises in Latin Prose Composition.

GERMAN.

For all classes:—

1. Constant drill in German pronunciation and in the idiomatic use of words and sentences.
2. All written exercises in German script.
3. Memorising of select passages from prose and poetry.
4. Sight reading and dictation according to time.
5. Study of geography and history referred to in German readers.
6. Comparative study of English and German.
7. Daily blackboard work.

A.—Two Years' Course.

Course (1a).—Three lessons a week in grammar and translation; two lessons in reading and conversation. Thomas' German Grammar: The articles, noun, adjective, pronouns, numerals. The verb: Formation of tenses, auxiliaries of tense, weak conjugation of the verb. Word order. All exercises translated. German reader: Seligmann's Altes und Neues. Conversation: Easy questions on the story read to be answered in German; conversational exercises with new words and idioms given in grammar. Written exercises, three to five times a week.

Course (2a). Two or three lessons a week in grammar, and respectively as many reading lessons. Thomas' German Grammar. Review of subjects studied in Course (1a). New: Strong conjugation of verbs.—Principal parts of all strong verbs, modal auxiliaries.—Passive voice. Reflexive, impersonal, compound verbs.—Special attention paid to subjunctive.—The particles.—All exercises translated. Written exercises three times a week. Composition: Selections from Harris' German composition, Part II. Reading: Super's Reader. Von Hillern's Höher als die Kirche. Conversation: In connection with each reading lesson, extemporaneous talks on some historical subject.

Course (3a).—Three lessons in reading and conversation; two lessons a week in grammar and composition. Thomas' German Grammar. Syntax: The articles, noun, adjective, and pronouns. Review of the corresponding lessons in Part I. German Composition: Selections from Harris' composition; three written exercises a week. Reader: Dahn's Ein Kampfum Rom.

Course (4a).—Four lessons a week in reading and conversation; one lesson in grammar and prose. Thomas' German Grammar. Syntax: The verb, with special attention to the subjunctive.—The particles.—Formation, combination, and order of words. Composition: Selections from Jagemann's German Prose Composition, with a systematic comparative study of English and German. Reading: Schiller's Wilhelm Tell. Hauff's Lichtenstein. Careful study of historical references. Schiller's life and works in connection with a general study of German literature. All lessons conducted in German. Two written exercises a week, one translation and one essay on Maria Stuart.

B.—Four Years' Course.

Course (1).—Grammar: Harris' German lessons (3 or 4 lessons a week). The articles.—The verb: Auxiliaries of tense—weak and strong conjugation. The noun—pronouns—prepositions.—Word order. All English and German exercises translated. Reader: Guerber's Märchen. Part I. Frequent conversational exercises. Written exercises three or four times a week.

Course (2).—Grammar: Harris' German lessons. Review. New: The adjective, numerals, pronouns, prepositions. Word order completed. Uses of the subjunctive and conditional. All exercises translated. Written exercises three times a week. Reader: Stein's Geschichten vom Rhein. Guerber's Märchen. Part II. Drill in speaking German, using all new words and idioms.

Course (3). Grammar: (Two lessons a week). Thorough review of subjects taken in classes 1 and 2. New: Separable—inseparable—reflexive—impersonal verbs—passive voice—modal auxiliaries—adverbs—conjunctions. Composition: Selections from Bernhardt's German Prose Composition. Written German exercises three times a week. Reading: Storm's Immensee. Brandt's German Reader. German spoken during all these lessons and as much as possible in reading the German lessons in Bernhardt's.

Course (4).—Harris' Grammar: General review and principal parts of all strong verbs (one lesson a week). Composition: Two lessons a week in Poll's German Composition. Reader; Jewett's German Reader (two lessons). Historical selections.—Leander's Träumereien. Conversation with all reading lessons. At least three written exercises a week.

Course (5).—Grammar: Thomas' German Grammar. Complete review of all lessons to the verb. Sight translations of the conversational English exercises into German. One lesson weekly. Composition: Selections from Poll's German Composition. Two written exercises weekly. Reader: Dahn's Ein Kampfum Rom. Two or three lessons a week, all conducted in German.

Course (6).—Thomas' Grammar: The verb—syntax of articles and noun. One lesson a week; one written exercise. Composition: Selections from Jagemann's Composition. Reader; Schoenfeld's Historical Prose Selections. Schiller's Wilhelm Tell. Three lessons a week, all conducted in German.

Courses (7 and 8).—The four years' course was first introduced September, 1897; consequently, an eighth class was in existence for the first time during this term. Thomas' Grammar: Use of tenses and modes, special attention being paid to the subjunctive.—Particles.—Formation, combination, order of words.—The sentence. Composition: Jagemann's Prose Composition. One lesson a week and also in connection with grammar lesson. Reading: Schiller's Maria Stuart. Schiller's life and works. One essay a week in German. Goethe's Gootz von Berlichingen. Schiller's Thirty Years' War. Three lessons a week. All in German.

FRENCH.

The same attention is given to pronunciation, declensions, conjugations, and idiomatic use of words and sentences, memorizing of choice selections, and conversations.

Course (1).—Whitney's Grammar.—Guerber's "Contes et Legendes."

Course (2).—Whitney's Grammar.—Guerber's "Contes et Legendes."

Course (3).—Whitney's Grammar.—Francois' Introductory French Prose Composition.—"Bruno's Le Tour de la France par deux Enfants."

Course (4).—Whitney's Grammar.—Bruno's "Le Tour de la France par deux Enfants." Notes by Fontaine. Vocal.—Francois' "Introductory French Prose Composition."

Courses (5 and 6).—Halevy's "L'Abbe Constantin." Kimball's Exercises based on "L'Abbe Constantin." Notes by Logie with vocabulary.

Courses (7 and 8).—Erckmann-Chatrian's "Madame Therese."—Notes by Rollins.—Nineteenth Century French Literature by L. L'Horta.

Course (1a).—Whitney's French Grammar.—Guerber's "Contes et Legendes." (Part I).

Course (2a).—Whitney's French Grammar.—Guerber's "Contes et Legendes." (Concluded).—Legouve et Labiche's "La Cigale chez les Fourmis."

Course (3a).—Whitney's French Grammar.—P. Merimee's "Colomba."—Kimball's Composition book based on "Colomba."

Course (4a).—Whitney's French Grammar.—Erckmann-Chatrian's "Le Conscrit de 1813."—Labiche et Martin's "Le Voyage de M. Perrichon."

ENGLISH.

Course (1).—Classics read: Lowell's "The Vision of Sir Launfal;" Hawthorne's "Tales of the White Hills" or Dickens' "The Cricket on the Hearth." Simple narration and description. Webster, Chapter III and Chapter IV. One recitation each week to be devoted to composition. At least two formal essays to be handed in. Study of words. Webster, Chapter IX (adapted). Study of figures of speech based on comparison. Historical outline through the age of Elizabeth.

Course (2).—Classics read: Irving's "The Voyage" and other sketches; Goldsmith's "The Deserted Village." Narration and description continued. Webster, Chapter III and Chapter IV. One recitation each week to be devoted to composition. At least two formal essays to be handed in. Study of paragraphs, sentences, and words. Webster Chapters VII, VIII and IX (adapted). Study of figures of speech completed. Historical outline in full.

Course (3).—Classics read: "The Merchant of Venice" or "Julius Caesar;" "Ivanhoe" Narration with plot. Webster, Chapter III. One period each week to be devoted to composition. At least two formal essays to be handed in. Versification. Outline of the origin and development of the English drama. Historical outline reviewed. Webster, Chapters VII, VIII and IX reviewed.

Course (4).—Classics read: Scott's "The Lady of the Lake," and one of the following:—"Twelfth Night," "As You Like It," the "Sir Roger de Coverley Papers." One period each week to be devoted to composition. At least two formal essays to be handed in. Webster, Chapters III, IV, VII, VIII, and IX reviewed. At least four consecutive weeks to be given to the study of the grammatical analysis of sentences.

Course (5).—Classics read: "A Midsummer Night's Dream" or "The Tempest"; Macaulay's Essay on Addison or Holmes' "The Autocrat of the Breakfast Table." Exposition: Webster, Chapter V. Paragraph structure: Webster, Chapter VII. Webster, Chapters III, IV, VIII, and IX reviewed. At least two formal essays to be handed in.

Course (6).—Classics read: "Macbeth" and "Silas Warner." Exposition: Webster, Chapter V. Historical sketch of the English novel. At least two formal essays to be handed in. Review Webster, Chapters III, IV, VII, VIII, and IX.

Course (7).—Classics read: Lincoln's Speeches, Lowell's "Commemoration Ode" and Essay on Lincoln; Emerson's "Self-reliance" (if possible). Argument: Webster, Chapter VI. At least two formal essays to be handed in. Classification of the forms of poetry. Webster, Chapters I–IX reviewed.

Course (8).—Classics read: Burke's Speech on Conciliation with the Colonies, Webster's reply to Hayne (if possible). Argument: Webster, Chapter VI. At least two formal essays to be handed in. Complete review of Webster, Chapters I–IX.

Literature.

Courses (1 and 2) in Literature include a study of the development of English literature from the earliest period to the present, and the critical reading of representative productions of the chief periods.

The material for the reference work in history and criticism is drawn from such works as A. H. Welsh's "The Development of the English Language and Literature," J. R. Green's "A Short History of the English People," and Henry Morley's "English Writers."

Some of the masterpieces read are, Chaucer's Prologue, selected essays from Bacon, Shakespeare's "King Lear," Milton's minor poems and Books I and II of "Paradise Lost," Pope's "Essay on Criticism," Cowper's "The Task," Macaulay's "Essay on Milton," selections from Ruskin's "Modern Painters," and poems from Wordsworth, E. B. Browning, and others.

HISTORY.

The subject of history may be pursued as a continuous study through the four years of the high school course. The several courses are so arranged as to develop unity. It is intended that the treatment of the subject and the character of the work done shall continually develop as the age and preparation of the student will permit. For illustrative material, maps, charts, diagrams, photographs, selections from literature and the sources, and stereopticon lectures are afforded. Reference work and work with the sources is gradually introduced. The separate courses may be briefly outlined as follows:—

Course (1).—Ancient Nations and Greece. Text-book, Myers' Ancient History. The Ancient Nations are studied briefly for the first five weeks of the term, the aim being to give the student some idea of ancient civilisation and an historical background for the study of Greece, which is continued through the remainder of the term. The growth of democracy, and the characteristic life of the great classical period, with its influence upon later times, are emphasised.

Course (2).—History of Rome. Text-book, Myers' Ancient History. This course covers the history of Rome to the fall of the Empire in the West in 476 A.D. The attention of the student is called particularly to the growth of Roman power and dominion, and to the significance of Roman law and civilisation.

Course (3).—Mediæval Europe. Text-book, Myers' Mediæval and Modern History. The period covered is from 476 A.D. to 1492 A.D., special attention being given to such subjects as Feudalism, the growth of the power of the Papacy, the Crusades, the Renaissance, and the Beginnings of the Nations to the Era of Reform.

Course (4).—Modern Europe. Text-book, Myers' Mediæval and Modern History. This course covers the development of Europe from 1492 A.D. to the present time, and treats of the Reformation and the era of political revolution. It is also intended in this course to give the student some idea of the condition and tendencies of European politics.

Course (5).—History of England. Text-book, Larned's History of England. Particular attention is given to the development of the fundamental principles of the English Government. It is the aim of the course to give the student some preparation for a proper appreciation of American political ideas and institutions.

Course (6).—United States History. Text-book, McLaughlin's History of the American Nation. The work of this course is intended to give the student an insight into the significance of the leading facts of American history. The political, industrial, and social development is emphasised, and an attempt is made to cultivate in the student the faculty for seeing and understanding the great movements of the American people, and for drawing truthful generalisations in regard to the tendencies in our own country, and its relative position among the great nations of the world.

Course (7).—A Study of the Development of English Political Institutions. The library method with note-book work is pursued in this course, thus freeing the student from dependence upon a text-book, and giving him an acquaintance with the leading authorities on English institutional history. The student is furnished with outlines from which a study of the following leading topics is made:—

I. Local Government.—1. The Township. 2. The Manor. 3. The Parish. 4. The Borough. 5. The Hundred. 6. The Shire.

II. The Legal System.—1. The System of Courts. 2. The Jury System.

III. Central Government.—1. The Witan. 2. The National Council. 3. Parliament. 4. The Privy Council and Cabinet.

Course (8).—A History of American Political Institutions. The lecture and library methods are used in this course, giving the student some practical experience in historical investigation. The study of Civics is pursued in an historical and practical manner. Our political institutions are traced from their beginnings, and the local events and offices are assigned to individual students to investigate personally and report to the class. The course may be briefly outlined as follows:—

I. Local Government.—1. The Township. 2. The County. 3. The Mixed Type. 4. The Michigan Township. 5. Michigan County. 6. Municipal Government. 7. Detroit.

II. State Government.—1. Colonial Central Government. 2. Steps towards Independence. 3. Transition from Colony to State. 4. The State of Michigan.

III. National Government.—1. Steps toward Union. 2. The Confederation. 3. The Federal Convention. 4. The Federal Executive. 5. The Federal Congress. 6. The Federal Judiciary.

IV. Citizenship.—1. Something about Law. 2. The Political Party System. 3. The Duties of Citizenship.

Drawing.

Course (1). Freehand Drawing.—Principles of perspective, proportion, from geometrical models. Theory of drawing, laws of sunlight, artificial and diffused light, definitions, lectures, illustrated, for note-book. Study of mass with charcoal; background work from still life, proportion, perspective, gradation, values, full light and shade. Three-tone studies, coloured paper, from cast of decorative ornament, and the human figure. Half-tone study of heads with charcoal. Pencil drawing from cast and still life.

Course (2). Mechanical Drawing.—Drawing instruments and their use, inking, lettering. Geometrical Drawing: Points, lines, surfaces, solids, definitions and problems relating to them; three plates of six problems each, inked. Elementary Orthographic Projections: Definitions and problems of points, lines, surfaces, solids; two plates of six problems each, inked. Isometric Drawing (Patent drawing), rectangular, round and oblique objects drawn to scale, inked; two plates. Isometric working drawing of table, measured and drawn to scale. Working drawings: Plans, elevations, sections; model stand measured and drawn to scale, inked.

Course (3). Freehand Drawing.—Brush drawing. Water colours, full colour, light and shade from still life. Pen drawing. Theory and practice, from casts of ornamental sculpture and still life. Pencil drawing, full light and shade. Original design, book-covers, initial letters, &c.

Course (4). Mechanical Drawing.—(*a*) For mechanical draughtsmen. Working drawings, shop patterns, elementary machine drawing. (*b*) For future teachers. Historical ornament in water colour; coloured paper in designs (stained glass, etc.); original ornamental design.

Girls' High School, San Francisco.

Programme of Studies, Girls' High School, San Francisco.—The daily programme of studies provides for four recitation periods during the morning session, 9 to 12, and from 1 to 3 in the afternoon for two periods of forty-five minutes each, together with a study period of thirty minutes (1·45 to 2·15). The course provides for twenty recitations (lessons) of forty-five minutes each per week for four years. The daily programme provides for four lessons as the normal amount of work. The amount of time given to private study daily in the school is two hours, and the time devoted to home study must not exceed two hours.

The following is the programme of studies and the syllabus:—

TABLE III.—PROGRAMME.

FIRST YEAR.

Language Courses.	Lessons per week.	English, Scientific, and Modern Language Courses.	Lessons per week.
English	5	English	5
Latin	5	Botany	5
Ancient History	5	Ancient History	5
Algebra	3	Algebra	3
Drawing	2	Drawing	2
	20		20

SECOND YEAR.

English	5	English	5
Latin	5	Mediæval and Modern History	5
Greek or French or German or Mediæval and Modern History	5	Latin or French or German or Zoology	5
Geometry	3	Geometry	3
Algebra	2	Algebra	2
	20		20

THIRD YEAR.

English*	3 or 5	English	5
Latin or Physiography or Zoology	5	Chemistry	5
History of England or Greek	5	History of England or Latin or French or German	5
Chemistry or French or German	5	Drawing	3
Geometry	2	Geometry	2
	20		20

FOURTH YEAR.

English* 3 or 5, and Mathematics 2, or Greek 5	5	English 5 or English 3 and Drawing 3	5
Latin or French or German	5	Mathematics or French or German	5
Physics	5	Physics	5
United States History and Government	5	United States History and Government	5
	20		20

Greek or French or German may be commenced either in the second or the third year, and if elected, two years are required, with a third year optional.

English.

In this department the aim is, from the beginning to the end, to show the power and the beauty of the English Language; to foster a desire, if not to create it, to handle this weapon in the best possible manner—to know, at least, what is required for "an accurate and refined use of the mother tongue." In order to do this, constant vigilance on the part of the student, and constant encouragement and enthusiasm on the part of the teacher, are demanded.

The endeavour is to make the pupils critical of themselves, as well as others, in everything pertaining to oral or written expression; to make them read carefully and intelligently; to grasp the thought firmly and express it simply and clearly in their own words; to appreciate the beauty of form as well as content, and to explain wherein that beauty consists;

* If five lessons per week be taken in the third and fourth years in this course, a total of twenty-two lessons per week will be required.

consists ; to feel the refining and elevating influence of the noblest poems ; to realise, in the study of the novel, something of "the mystery and dignity of life" ; to learn some of the influences that make or that mar lives, and to observe what great blessings or what great misfortunes often spring from apparently trivial things. Finally, the aim is to make them *think*, to broaden their minds, to intensify their sense of justice, and to quicken their patriotism ; to make them *love* literature and eventually become women "of intellectual resource, of public spirit, of refinement, with that good taste which is the conscience of the mind, and that conscience which is the good taste of the soul."

First Year—First Term.—(Five periods a week.)

Scott's Lady of the Lake, Gayley's Classic Myths (4th to 24th chapter).

GRAMMAR AND RHETORIC.

History of English Literature begun. Ivanhoe, Tom Brown at Rugby, and some of the best poems in American Literature, to be read at home and then discussed in class.

One-fifth of the time to be given in the classroom to drill in Composition. One half-hour weekly for impromptu compositions, the subject generally given, to the entire school, by the head of this department.

First Year—Second Term.—(Five periods a week.)

Whittier's Snow-Bound, Irving's Alhambra, Burn's Cotter's Saturday Night and Tam O'Shanter, Goldsmith's Deserted Village, Byron's Prisoner of Chillon, or Selections from Childe Harold, Classic Myths,—Completed, History of English Literature,—Completed.

GRAMMAR AND RHETORIC.

The Last of the Mohicans and Nicholas Nickleby, with some American poems, to be carefully read and discussed in class.

Composition, as in first term.

Second Year—First Term.—(Five periods a week.)

Macaulay's Horatius, Ballads of Heroism—Otterburne, Chevy Chase—Lowell's Democracy, Shakespeare's Merchant of Venice.

GRAMMAR AND RHETORIC.

History of English Literature continued, Lessing's Nathan the Wise, and Shakespeare's As You Like It, to be read in connection with Merchant of Venice, for purpose of comparison. Scott's Kenilworth and Curtis's Prue and I, to be read at home and then discussed in class.

Composition as in preceding terms.

Second Year—Second Term.—(Five periods a week.)

Shakespeare's Julius Cæsar, Coleridge's The Ancient Mariner, Emerson's The Fortune of the Republic, Emerson's The American Scholar, Lowell's Lincoln.

GRAMMAR AND RHETORIC.

History of English Literature continued, Shakespeare's Macbeth to be read in connection with Julius Cæsar. Hawthorne's House of the Seven Gables to be carefully read at home and then discussed in class. Any selection for supplementary reading may be changed to meet the needs of the class.

Composition as in preceding terms.

Third Year—First Term.—(Five periods a week.)

Macaulay's Warren Hastings, Tennyson's The Coming of Arthur and The Passing of Arthur, Lowell's The Vision of Sir Launfal, Lowell's The Commemoration Ode.

GRAMMAR AND RHETORIC.

History of English Literature, The Holy Grail and two of the following Idylls—Elaine, Guinevere, Enid, Gareth and Lynette—to be carefully read at home for discussion in class. Composition as in preceding terms, Austen's Pride and Prejudice, and the Marble Faun, to be read.

Third Year—Second Term.—(Five periods a week.)

Addison's Roger de Coverley, Milton's L'Allegro, Il Penseroso, and Comus, Goldsmith's Vicar of Wakefield, Eliot's Silas Marner.

GRAMMAR AND RHETORIC.

History of English Literature.

Tennyson's The Princess, and The Newcomes by Thackeray, to be read and discussed in the class.

Composition as in preceding terms.

Fourth Year—First Term.—(Five periods a week.)

Burke's Speech before the Electors at Bristol, Macaulay's First Speech on the Reform Bill, Webster's Reply to Hayne, Milton's Lycidas and Sonnets II, XVI, XIX, XXII, Gray's Elegy, Dryden's Alexander's Feast.

GRAMMAR AND RHETORIC.

History of English Literature, Lamb's Essays of Elia, The Autocrat of the Breakfast Table, to be read and discussed.

Composition as in preceding terms.

Fourth Year—Second Term.—(Five periods a week.)

Wordsworth's Loadamia, Tintern Abbey, Intimations of Immortality, Ode to Duty, and best sonnets, Keat's Eve of St. Agnes and The Nightingale, Shelley's The Cloud and the Skylark, Browning's Transcript from Euripides, Arnold's The Scholar Gipsy and Merman, Tennyson's Oenone.

GRAMMAR AND RHETORIC.

History of English Literature, Carlyle's Essay on Burns, or Emerson's Compensation, and Self-reliance, The Alkestis of Euripides and the Antigone of Sophocles, to be read at home and discussed in class. Some American poems every year

Composition as in preceding terms.

History—Outline of Course.

History, either as a required or an optional study, is offered in every year of the course.

To give the student a wider knowledge of the civilising influences that have prevailed in the world's history; to present a broader outlook; to train the student to think rather than to accumulate knowledge; to learn where information is to be found; to acquire skill in extracting that information from the printed page; to possess the power of using the information which has been gathered, at the same time inspiring a love for good reading: to awaken an interest that may lead to individual work; to cultivate judgment by seeing relation between cause and effect; to arouse and stimulate habits of investigation and discussion; to promote an acquaintance with political and social environment; to comprehend political and governmental questions; to cultivate a sense of duty and responsibility of citizenship; to secure that broader knowledge, that more tolerant spirit that comes from the study of other peoples and other times, are some of the aims of the work in history.

Text-books are used to hold the student to definite line of work. Supplementary books are designated for material outside of the text-book.

From original sources properly selected materials are given for study.

Judicious use is made of photographs and pictures.

Note books are required for outline reports of intensive study on the library or laboratory method, that is, careful and special study of some important epoch or subject by the use of several books. These reports are made the basis of class recitations and discussions.

Each year the work is developed and widened so that students deal with broader topics.

Current History.—Students are required to take note of passing events and occurrences of historical importance. At least one period a month is devoted to receiving their reports and discussing them.

The same general plan of work is carried through the entire course in history.

First Year—First Term.—(Five periods a week.)

GRECIAN HISTORY.

Text-book.—Myers' Oriental Nations and Greece. Supplementary references furnished by teacher.

Outline of Work.—That the student may learn that the germs of Hellenic culture and development had their birth in the East, the history of Greece is preceded by an introductory study of the more important Oriental civilisation, especially of the nations in the valleys of the Nile and of the Euphrates.

Main events in Grecian history; characteristic life and development; spread of Greek civilisation over the East; connection and comparison of Greece and Rome; influence on world's civilisation.

First Year—Second Term.—(Five periods a week.)

ROMAN HISTORY.

Text-book.—Myers' History of Rome. Supplementary references furnished by teacher.

Outline of Work.—Main events in Roman history, development of Roman power, expansion of Roman dominion, spread of Roman Civilisation, Causes of Rome's Downfall, Influence on World's History and Civilisation.

Second Year—First Term.—(Five periods a week.)

MEDIÆVAL HISTORY.

Text-book. Supplementary references furnished by teacher.

Outline of Work.—General movement of Teutonic tribes. Main facts, characteristics, important events and eras which mark the Middle Ages. Great moving forces and results.

Prominent institutions and their essential features. Period of transition.

Second Year—Second Term.—(Five periods a week.)

MODERN HISTORY.

Text-book. Supplementary references furnished by teacher.

Outline of Work.—New development in economic conditions, religious, political, social, intellectual life. The great forces which brought them about. New institutions, new governments. Epochs of international importance. Present conditions.

Third Year.—(Five periods a week.)

ENGLISH HISTORY.

Text-book. Supplementary references furnished by teacher.

Outline of work.—Main facts. Gradual development of England's political institutions and fundamental principles. Economic, industrial, social and constitutional progress. Connection with and influence on American history. Expansion and Imperial development. Continental relations. Present conditions.

Fourth Year.—(Five periods a week.)

UNITED STATES HISTORY AND CIVIL GOVERNMENT.

Text-books.—Channing, Students' History of the United States, Bryce, American Commonwealth (abridged). Supplementary references furnished by teacher.

Outline of Work.—Review of early history. Colonial period. Development of American political ideas. Important epochs. Building up of Federal government and institutions. Industrial, economic, social, political conditions. Foreign relations.

Study and discussion of Municipal government; of State government; of Federal government. Relations between local, State, and Federal governments. Fundamental ideas of law and justice. Comparative view of the Executive and Legislative Departments of the Governments of the United States, France, England, and Germany.

Mathematics.

The first object in the work in Mathematics is to give pupils who will be confined to elementary courses in Algebra and Plane Geometry, the mental discipline and the practical knowledge which these subjects afford. As the purpose of a course in Algebra should be something more than the acquirement of greater facility in working examples, and in the use of the equation and formulas, one aim of the work in Algebra is to lead the pupils to seek for reasons behind the rules and principles they use.

The second object in the mathematical course is to lay a solid foundation for advanced work in mathematics.

For the first three years, the work in Mathematics is the same in all courses. In the fourth year, the pupil is allowed a choice of three options.

First

First Year.

ALGEBRA.

Three periods per week throughout the year.

The year's work covers the elements of Algebra through factoring, and includes the solution of simple equations. In connection with all topics, the corresponding topics of Arithmetic are reviewed, and developed from their special application to arithmetical number, to their full application to general number and to negative number.

Second Year.

Algebra, wo periods per week throughout the year; Geometry, three periods per week throughout the year.

ALGEBRA.

Through simple quadratic equations; that is, factoring and the solution of equations by means of factoring, the remainder and the factor theorems, the theory of exponents, the calculus of radicals, simultaneous equations of the first degree, with problems involving their solution, simple quadratic equations

PLANE GEOMETRY,

The first three books of Beman and Smith's Plane Geometry with exercises. Application of geometric analysis and the method of loci. Complete discussion of general theorems and problems.

With the beginners the subject-matter of Geometry is developed most carefully, in order to give the pupils a clear understanding of geometric conceptions, postulates, and methods, and to lead them to realise from the first that Geometry is but a means for training the mind in accurate logical reasoning from known or assumed principles to their logical conclusions.

Precision and clearness of expression are invariably required, impromptu exercises are given frequently, and original proofs and solutions are constantly encouraged.

Third Year.

PLANE GEOMETRY.

(Two periods per week throughout the year.)

The first three books of Beman and Smith's Geometry are reviewed, and the remaining books, including exercises are studied. Various methods of determining the ratio of the circumference to the diameter are presented.

Fourth Year.

Two periods a week for the Modern Languages Course, in which one of the three following subjects must be elected:

Five periods a week for the English Scientific Course, in which two of the three following subjects must be elected:

1. Solid and Spherical Geometry. Beman and Smith's Geometry, Books VI, VII, and VIII, with exercises. Careful study of solids from models made by pupils. Subjects assigned for special investigation. Practical value of Solid and Spherical Geometry illustrated by many exercises in mensuration.

2. Plane Trigonometry. An introductory course in logarithms. Trigonometric functions of angles. Development of trigonometrical formulæ. Solution of plane triangles. Relations between functions of angles.

One of the objects of this course is to lead pupils to see the practical value of Geometry and Algebra.

After facility in the use of trigonometric tables has been acquired, applications of the principles of Trigonometry are made to problems in mensuration, surveying and navigation.

3. Advanced Algebra. Review of quadratic equations, with the theory of the quadratic equation. Simultaneous quadratic and higher equations, surds and complex quantities, ratio, proportion, variation, progressions, determinants, and elements of the theory of equations, including the solution of numerical equations by Horner's Method.

SCIENCE.

The general aim of the science work in the course is two-fold in its character.

First: To develop the power of correct observation, the training of the senses to give their testimony unbiassed by preconceived notions, to draw the logical conclusions from these observations in the form of general truths, *induction*, and to apply these general truths under varying conditions, *deduction*.

Second: To give to the pupil that broad information and correlated knowledge of Nature's laws underlying a liberal education.

BOTANY.

The time devoted to the subject is distributed between ten laboratory periods of ninety minutes each and two recitations of forty-five minutes each, per week, throughout the year.

Text-book.—Rattan's California Flora.

The students work with the essential organs of a plant until they become fairly acquainted with the gross anatomy of the higher forms, and have acquired some power in the direction of observation, discrimination, comparison, and botanical terminology. To encourage close observation, each part of the plant studied is carefully drawn.

During the last year there have been raised from seed in the laboratory several kinds of leguminous plants, corn, buckwheat, morning glory, nasturtiums, oaks, pines, buckeyes and beeches, and the students have been greatly interested in watching their growth and making notes of their progress. Beside the class work, each student undertakes the life history of a plant, experimenting by herself and bringing in a carefully-written report of her work, and she especially enjoys presenting the fruit of her plant to her successors.

The garden and conservatory of the school have furnished many specimens for study, and the gardeners of Golden Gate and other parks have kindly furnished whatever we desired from their stores. Botanical excursions are made from time to time to gather material, and to study the habitats of the plants.

Though the Phanerogamia receive the most attention, the lower orders are not neglected, and as the school owns twenty compound microscopes for the use of the students in the laboratory, and three finer ones for more advanced workers, a good deal of microscopic work is done which requires careful drawing and description.

The California State Floral Society invites the students to all their meetings, and Miss Eastwood, of the Academy of Sciences, takes so much interest in their work that she kindly read to them a paper on "The Trees of California," prepared for one of the Botanical Societies of the East.

ZOOLOGY.

The time devoted to the subject is distributed between two laboratory periods of ninety minutes each, and two recitations of forty-five minutes each, per week, throughout the year.

Text-books.

A brief review of Physiology is given, particular attention being paid to circulation, digestion and the organs of sense, to lead the students to acquire information that can be used as a basis for comparative work in Zoology.

The dissection of the eye of an ox, the brain of a sheep, and such other organs as can be obtained from the market in sufficient quantities for individual work forms part of the course.

The rabbit and chicken are dissected by the teacher in the presence of the class, and different parts of the animals assigned to individual students for special work.

At different times, salmon and trout have been raised from the egg, and the development carefully studied. An aquarium in the laboratory, and a fish pond in the garden, give opportunities for the study of living specimens.

Pieces of coral and sponge, star fishes, sea urchins, earth worms, clams, abalones, shrimps, sand crabs, grasshoppers, flies, tree toads and smelts, have been placed in the hands of the students, and they were required to make drawings and write descriptions of what they had themselves observed while in the laboratory.

Each student was also required to make a study of some living animal and to write a good description, with observations as to its habits, intelligence, etc.

To acquaint the pupils with a greater number of forms, visits were made to the Academy of Sciences and the Park Museum.

PHYSIOGRAPHY.

Five lessons a week for one year.

This course is "designed to cultivate habits of observation, comparison, and reflection," and to acquaint the student with the phenomena of nature and the underlying causes. A study will be made of the earth in its relation to the solar system, its movements, structure, conformation, land areas, bodies of water, currents, winds, climate, animals, plants, and all phenomena connected therewith. This study will be conducted on the laboratory method as far as practicable, making use of such texts as Tarr's Elementary Physical Geography as an outline of the work covered.

CHEMISTRY.

The time given consists of two laboratory periods of ninety minutes each, and two recitations of forty-five minutes each, per week. The text-book in the hands of the pupil is Remsen's Introduction to the Study of Chemistry. Experiments are taken mainly from Richardson and Williams.

The objects of the course in Chemistry are to give the pupils a good knowledge of the general principles of elementary chemistry, which may serve as a thorough basis for future work, if desired, to acquaint them with the practical application of the subject to the manufacturing industries, and to teach them to draw correct conclusions from observed results.

Consideration is given to the preparation and properties of the non-metallic elements, the metallurgy and properties of the metallic elements, the fundamental laws of the science, the general behaviour of gases under changing conditions of temperature and pressure, the various methods of determining formulæ, molecular and atomic weights.

The laboratory work serves as a basis for the work of the class-room, and is supplemented by demonstrations and lectures. Its aim is to give the pupils, at first hand, a knowledge of the preparation and properties of the elements and their most important compounds, to develop skill in manipulation, to interpret results correctly, and to record notes concisely. As many quantitative experiments as possible are offered in order to give the pupil a proper respect for exact experimental work, and also to serve as the best means for the introduction of the mathematical work of Chemistry. No elaborate course in qualitative analysis is attempted, but simple separations and the determination of metals in unknowns form part of the work with these elements.

Visits to factories prove of greatest benefit in giving the pupil a knowledge of the practical applications of the science.

PHYSICS.

The work in Physics consists of two laboratory periods of ninety minutes each, and two recitations of forty-five minutes each, per week, throughout the year. The development of the subject is mainly inductive, the pupil being encouraged to draw upon her observations in the laboratory and the phenomena familiar to daily life, rather than the text-books, as her source of information. The idea of the conservation and correlation of energy is kept constantly in the pupil's mind, and the main effort is directed toward the power of generalisation. The laboratory work consists of seventy-five or more experiments selected from various sources. These are mainly quantitative in their character. The separate and successful plan is followed, rather than the collective, as tending to make the pupils more reliant upon their own resources. All observations are carefully recorded, with the inference drawn therefrom, and the results are subsequently discussed in the recitation.

As a valuable adjunct to the prescribed work in Physics and Chemistry, and, indeed, to the whole work of the school, there is a large and enthusiastic Camera Club, self-supporting, the members of which find at the school all the requisites and conveniences for the prosecution of their work.

Classical Department.

LATIN.

The course in Latin covers the ground of Subjects 6 and 7 of the requirements for admission to the University o California.

A two-years' course prepares the pupil for Subject 6 (2 units). This admits to the Colleges of Social Sciences and Natural Sciences.

A four-years' course gives, in addition to the above, Subject 7 (2 units), and admits to the College of Letters.

First Year—(Five periods a week).

Careful study of the First Book, with special aim at mastery of inflection, so that the pupil may be perfectly familiar with the forms before beginning the study proper of Latin literature. All recitations to be with books closed, and translation at hearing, with a view to secure concentration.

The text-book is Tuell and Fowler's First Latin Book.

Second Year—(Five periods a week).

Via Latina as an introduction to Cæsar. Cæsar's Gallic War, Books I to IV.

All the text read and translated, with careful study of syntax, and constant reference to Grammar.

Pupils trained to acquire facility in translating Latin prose.

Daily work in Composition based on Cæsar, oral or written, to secure accuracy in form and syntax by imitation of Latin idioms.

Reading at sight from Book V of Cæsar.

The text-books of this year are—Via Latina, Allen and Greenough's Latin Grammar, Allen and Greenough's Cæsar, Daniell's New Latin Composition.

Third Year—(Five periods a week).

Cicero's Orations against Catiline. Composition, Grammar, Reading at Sight.

Syntax as in the study of Cæsar.

Attention is given to oratorical style and arrangement, and to the subject-matter of the orations. Cicero's life and the history of his time is studied. The pupils are required to read the original, and to commit passages to memory. Conjugations and declensions reviewed. The oral and written sentences taken from Daniell's Composition, based on the orations read, are given, and special attention is given to continuous discourse. Reading at sight is taken from Cæsar's Gallic War, Book V, and from an additional oration of Cicero. Selections from Cicero's Letters are read to the class for exercise in dictation and sight translation.

The text-books for this year are—Allen and Greenough's Cicero, Daniell's New [illegible] Composition, and the Grammar previously used.

Fourth

Fourth Year—(Five periods a week).

Virgil's Æneid, Books I to VI.

Syntax and irregular forms are studied, also the rules of quantity and scansion, and every line of the original is read. Attention is given to poetical style, to the author's thought, and to all mythological allusions and references. The literary value of the poem is studied. Careful translations in good idiomatic English are required, and the review lesson must be correctly and fluently translated. Pupils are trained to give a correct metrical scheme in writing, and to read the lines so as to convey the thought of the author. Passages are committed to memory. Virgil's life studied. Latin Composition at least twice a week. Sentences are given based on prose previously studied, to exemplify all kinds of constructions. There is practice in continuous narrative, and in changing from direct to indirect discourse. In connection with the work in composition the Grammar is reviewed.

Reading at sight from Virgil's Eclogues and from Cicero and other prose authors.

The text-books for this year are—Greenough's and Kittredge's Virgil, Nutting's Supplementary Latin Composition, and the Grammar previously used.

GREEK.

It is intended that the three years' Greek course shall not only satisfy the entrance requirements to American Universities, but shall also furnish an introduction to Greek literature of real value to those who pursue the study no further than the High School. The work of the first two years covers Subject 8 (2 units) of the requirements for admission to the University of California, the minimum of Greek required for matriculation in the College of Letters. The work of the third year covers Subject 9 (1 unit) and admits to regular Greek in the Freshman year. Pupils who enter the University with two years of Greek are required to take there work corresponding to the third year in the High School before beginning the Freshman Greek.

First Year—(Five periods a week).

A study of the forms and syntax of Attic Greek, with illustrative sentences in Greek and English. The translation at sight of easy passages throughout the year. An introduction to a prose writer, Xenophon, during the last six weeks.

The text-books used are White's First Greek Book, Xenophon's Anabasis, Goodwin and White, Goodwin's Greek Grammar.

Second Year—(Five periods a week).

The reading of Xenophon's Anabasis, Books I to IV.

The reading at sight of one book of the Anabasis or its equivalent.

Greek Prose Composition throughout the year.

The text-books are Xenophon's Anabasis, Good and White, Pearson's Greek Prose Composition, Goodwin's Greek Grammar.

Third Year—(Five periods a week).

Homer's Iliad, Books I to III, omitting the Catalogue of Ships.

Attention is given to Homeric forms, and the Attic equivalents are required.

Homeric Syntax is studied, and the meaning and composition of words peculiar to Homer. Training is given in reading the original with ease and expression. Rules of metre are studied. The literary value of the poem is noted and compared with the Epic of Virgil. An effort is made in the third year of Greek to cause the pupils to appreciate the beauties of the Greek language and to inspire them with a love for the Classics.

Reading at sight is given from the Odyssey and the last three books of the Anabasis.

Part III of Pearson's Greek Prose Composition is completed in this year, and Greek Grammar reviewed.

The text-books are Seymour's Revised Edition of the School Iliad, Pearson's Greek Prose Composition and Goodwin's Greek Grammar.

FRENCH.

Five lessons a week, each year.

First Year.

Grammar.

Pronunciation.—Greatest care exercised to prevent pupils from forming bad habits from the start.

Reading.—First Term: "Le chien du capitaine" (Enault); at least 50 pages of prepared text. Second Term: "Le cachet rouge" (de Vigny): 50 pages prepared text. The idiomatic use of English in the translations insisted upon. Supplementary reading at choice of the teacher.

Composition.—Fifteen sentences a week. Towards the middle of the second term easy prose extracts may be turned directly into French, teacher supplying vocabulary where necessary. Written translations by pupils to be read aloud, compared and corrected immediately. To secure better individual results the exercises in composition should be done in the classroom.

Conversation.—On texts read and translated, ten minutes each lesson. Great care should be taken in the beginning to master the different forms of an easy text in order to give the pupils more assurance in their enunciation.

Translation at Hearing.—Of prepared texts. Much time should be devoted to this indispensable practice for the training of the ear.

Second Year.

Grammar.—General review.

Reading.—First Term: "Le Gendre de M. Poirier" (M. Augier), or "Le Verre d'Eau" (Scribe). Second Term: "Colomba" (Mérimée).

Composition.—French text used, 25 lines at least, read by teacher and rendered by pupils.

Conversation.—Fifteen minutes every day. The French language used almost exclusively in the classroom.

Reading at sight and Translation at hearing of prepared and unprepared texts. All the available time should be devoted to these exercises.

Third Year.

French language used exclusively in the classroom.

Grammar.—Occasional review.

Reading.—"L'Avare" (Molière). Supplementary reading at choice of the teacher.

Composition.—Once a week on historical or literary subjects. Prosody.

Literature.—A short history of French literature. Text-book not decided upon.

Conversation and discussion of texts read.

GERMAN.

Five lessons a week, each year.

First Quarter.—About 10–12 lessons of Shorter Collar-Eysenbach. Declension of nouns, adjectives and personal pronouns. Conjugation of verbs in the indicative.

Second Quarter.—First hundred pages of grammar. Reading of 20–30 pages from either Huss' German Reader or Leander's Träumereien.

Third and Fourth Quarter.—Finish grammar. Reading of about 60–70 pages from Leander's Träumereien, Zschokke's Der zerbrochene Krug, Becker's Der Cyclop, Heyse's L'Arrabbiata.

Second

Second Year.

Repeat grammar, particularly the appendix. Reading from Storm's Immensee, Seidel's Lebsrecht Huehnchen, Schiller's Der Neffe als Onkel and Das Lied von der Glocke, Wildenbruch's Das edle Blut, Freytag's Die Journalisten, Scheffel's Der Trompeter. About 150 pages or more.

Composition.—About two-thirds of Stein's German exercises, Part I and some of Part II.

Conversation based on reading and composition. The German language will be used as much as possible in the classroom.

Third Year.

Reading from 250–300 pages of Standard texts; Lessing's Minna v. Barnhelm; Schiller's Tell or Maria Stuart; Keller's Kleider machen Leute; Freytag's Soll und Haben; Gœthe's Hermann und Dorothea. Sight reading.

Composition.—Exercises from II part of Stein; free reproduction of short stories that have been read to the class letter writing.

The German language is to be used as much as possible in the classroom.

During the second and third years a number of German poems are to be memorised.

Course of Study for Drawing.

It has always been the successful aim of this School to place Drawing on an equal footing with any other branch of scientific study.

It is considered that a clear conception with a careful expression of logical thought in lines is as deserving as the most artistic expression of pupils equipped by nature with superior talent.

As a proof that talent in this study does not count for more than in any other subject, it will be well to note that ever since drawing has been included in the curriculum of the Girls' High School, the standard of the students in this subject, highest and lowest, always corresponds with their average in all branches of study.

FREEHAND.

First Year (two lessons per week.)

First Term.—From leaves and blossoms.

Second Term.—From geometrical solids in outline only.

Second Year (three lessons per week.)

First Term.—From geometrical solids mixed with simple specimens of still life, as baskets, books, &c.

Second Term.—Same as in first half with the necessary instructions for shading and the use of different mediums such as crayon, charcoal, pastel, and wash.

Third Year (three lessons per week.)

From plaster-paris ornaments, pertaining to historical periods and the different architectural orders.

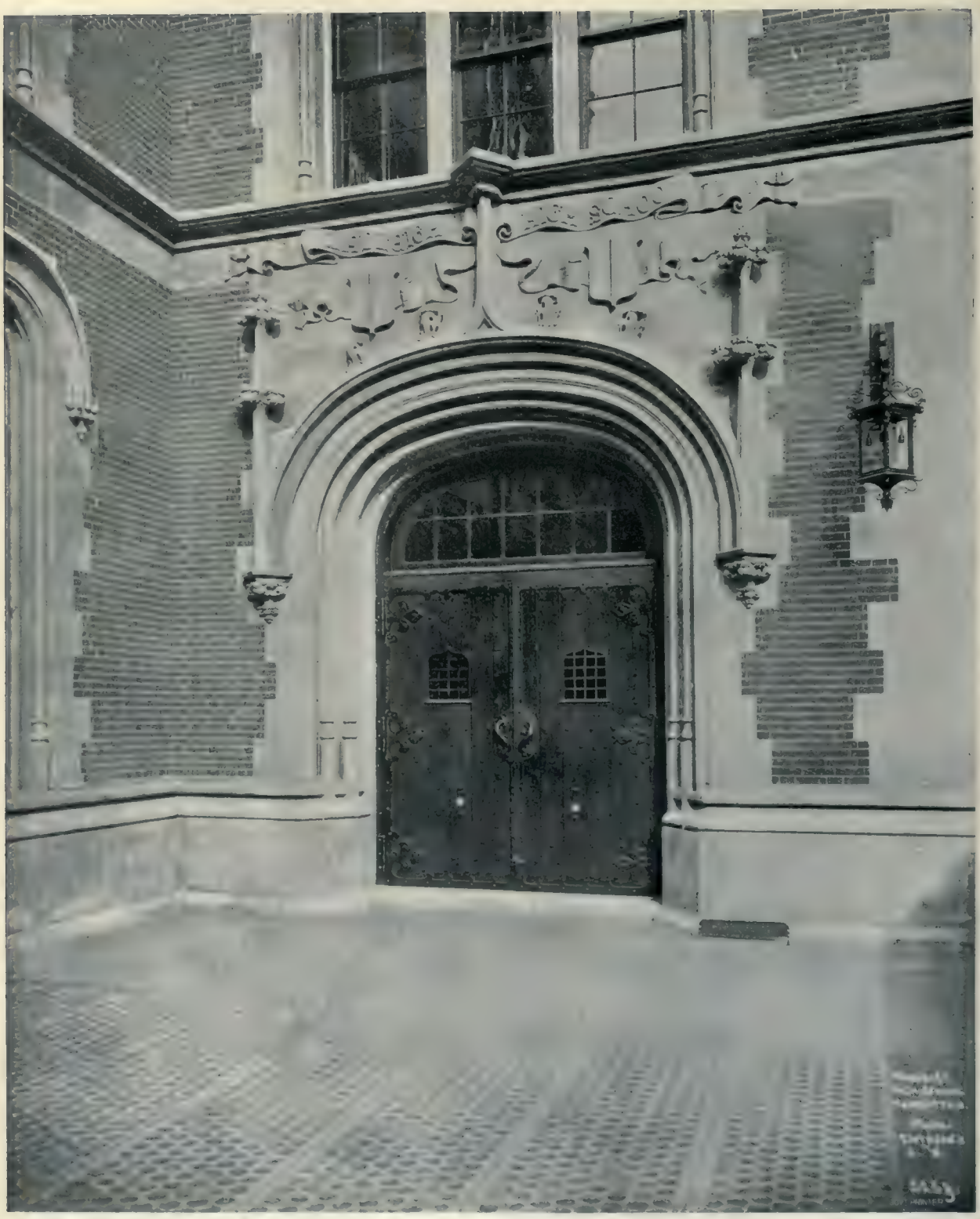
GEOMETRICAL DRAWING.

Fourth Year (five lessons per week.)

For those who wish to prepare for Mechanical Engineering or the study of Architecture, a course of one year in Geometrical Drawing will be given, in which emphasis will be placed on the necessity of accuracy and neatness in the use of drawing instruments.

CHAPTER IX.

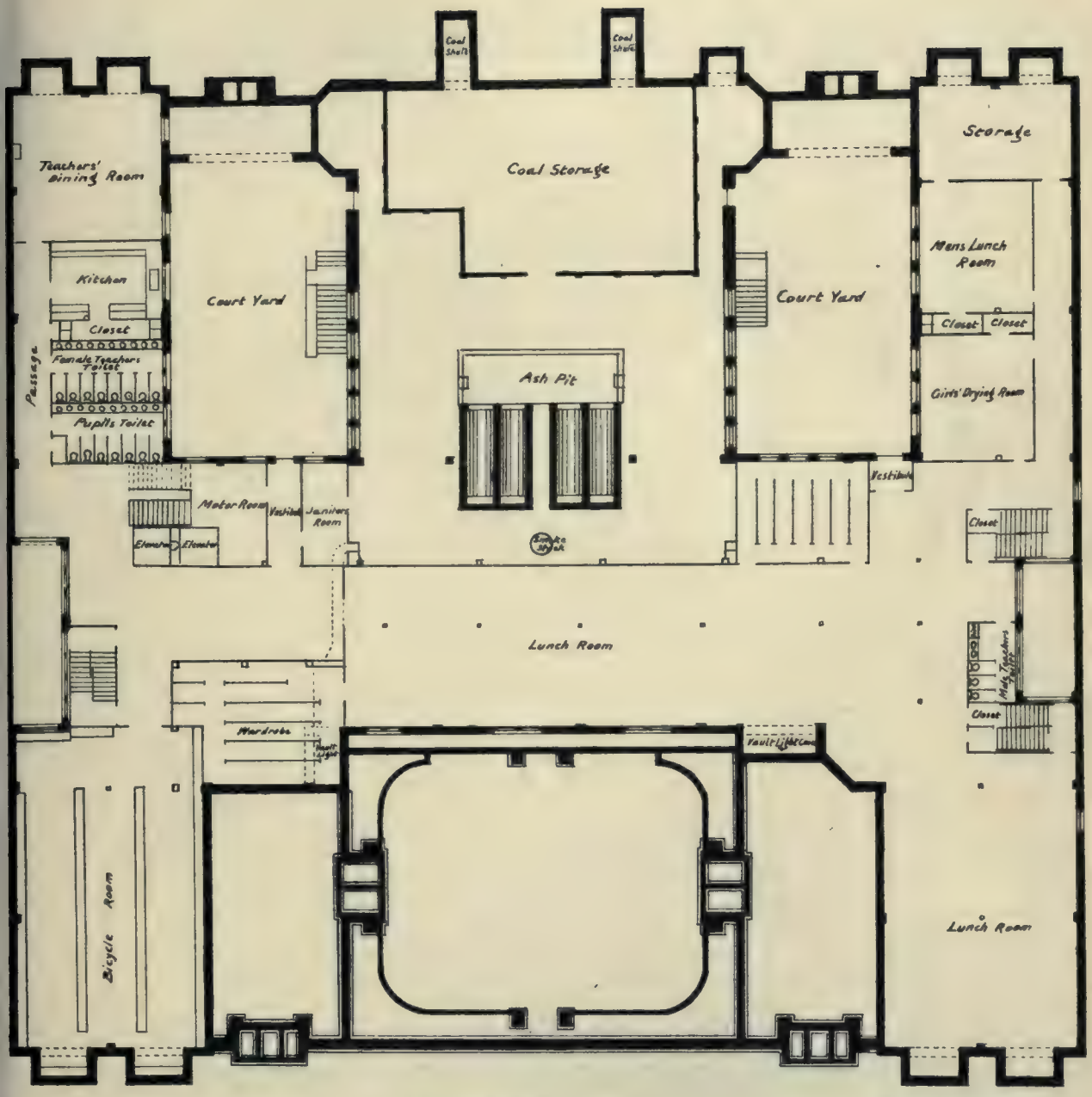
WADLEIGH HIGH SCHOOL FOR GIRLS, NEW YORK CITY, U.S.A.



MAIN ENTRANCE.

ENTRANCE TO AUDITORIUM.

LIBRARY
OF THE
UNIVERSITY
OF CALIFORNIA



Scale 1/8 in. = 1 ft.

BASEMENT-PLAN

Girls' High-School
114th to 115th Sts bet 7th & 8th Aves
Borough of Manhattan, New York City

33842

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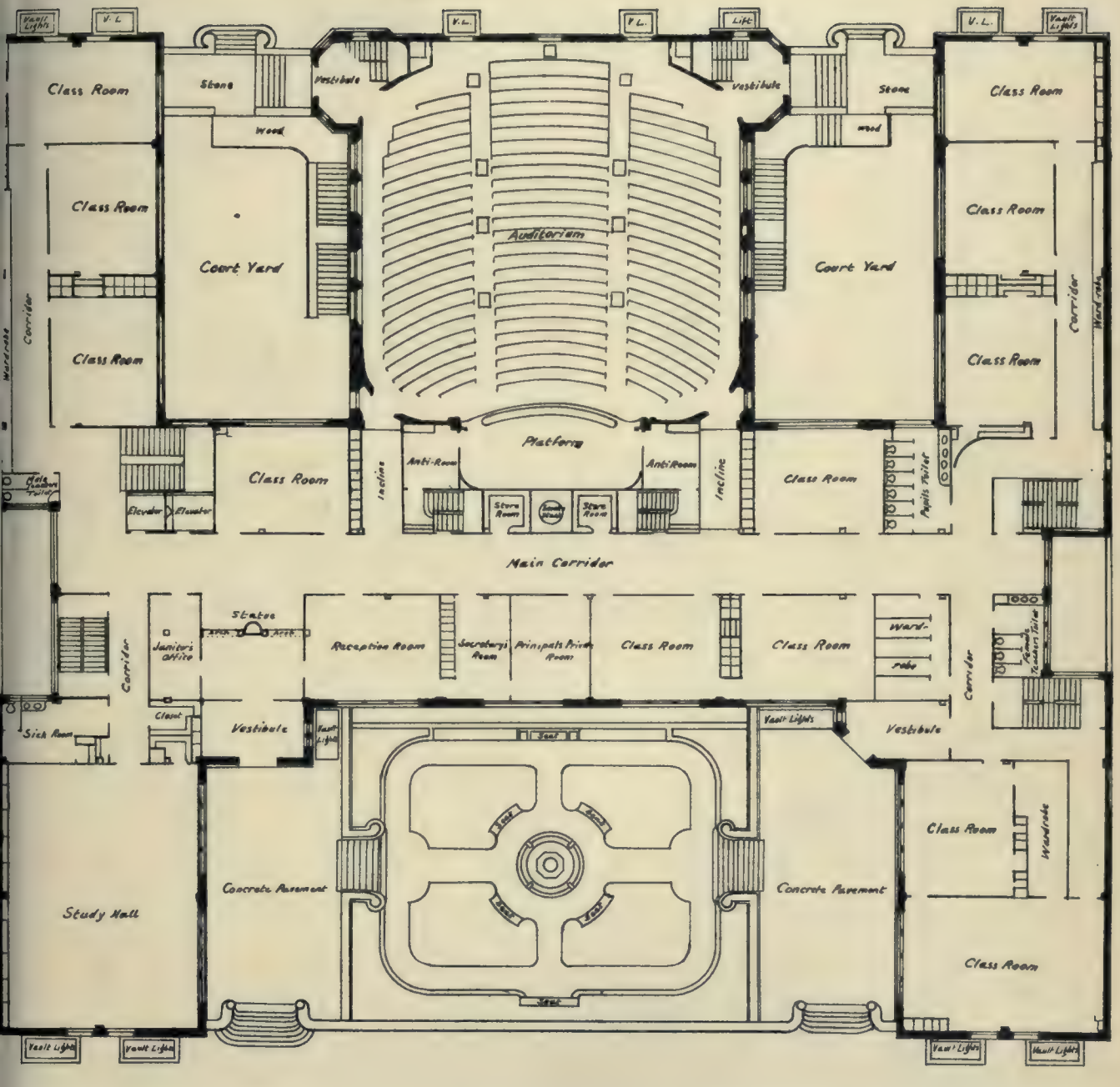
Sydney, N.S.W.



Scale

— FIRST STORY PLAN —

— Girl's High School —
— 114th to 115th Sts. bet. 7th & 8th Ave's —
— Borough of Manhattan, New York —

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LIBRARY
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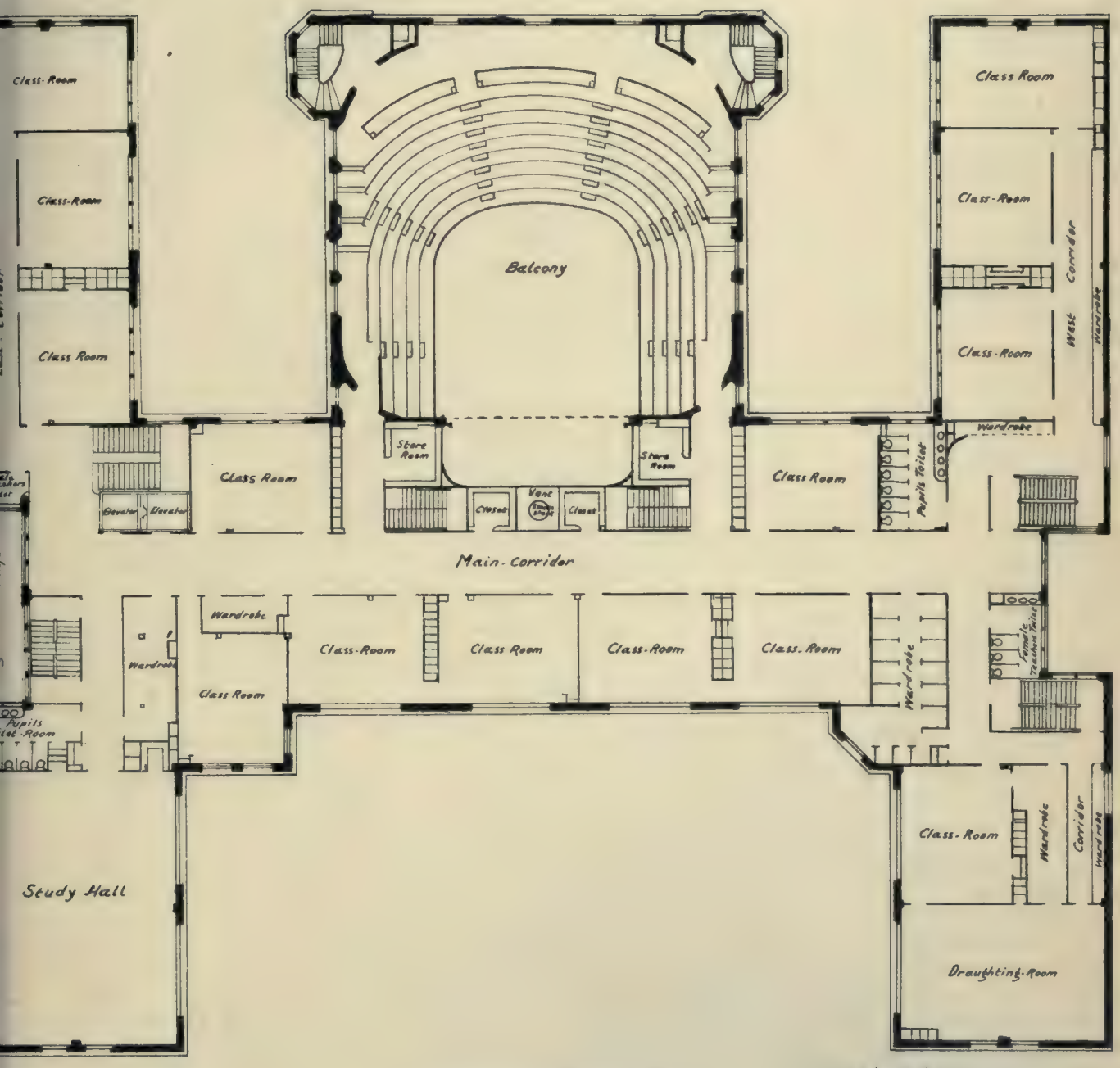
OF VIRGINIA



—SECOND STORY PLAN—

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—Girls High School—
—114th to 115th Sts bet. 7th & 8th Aves.—
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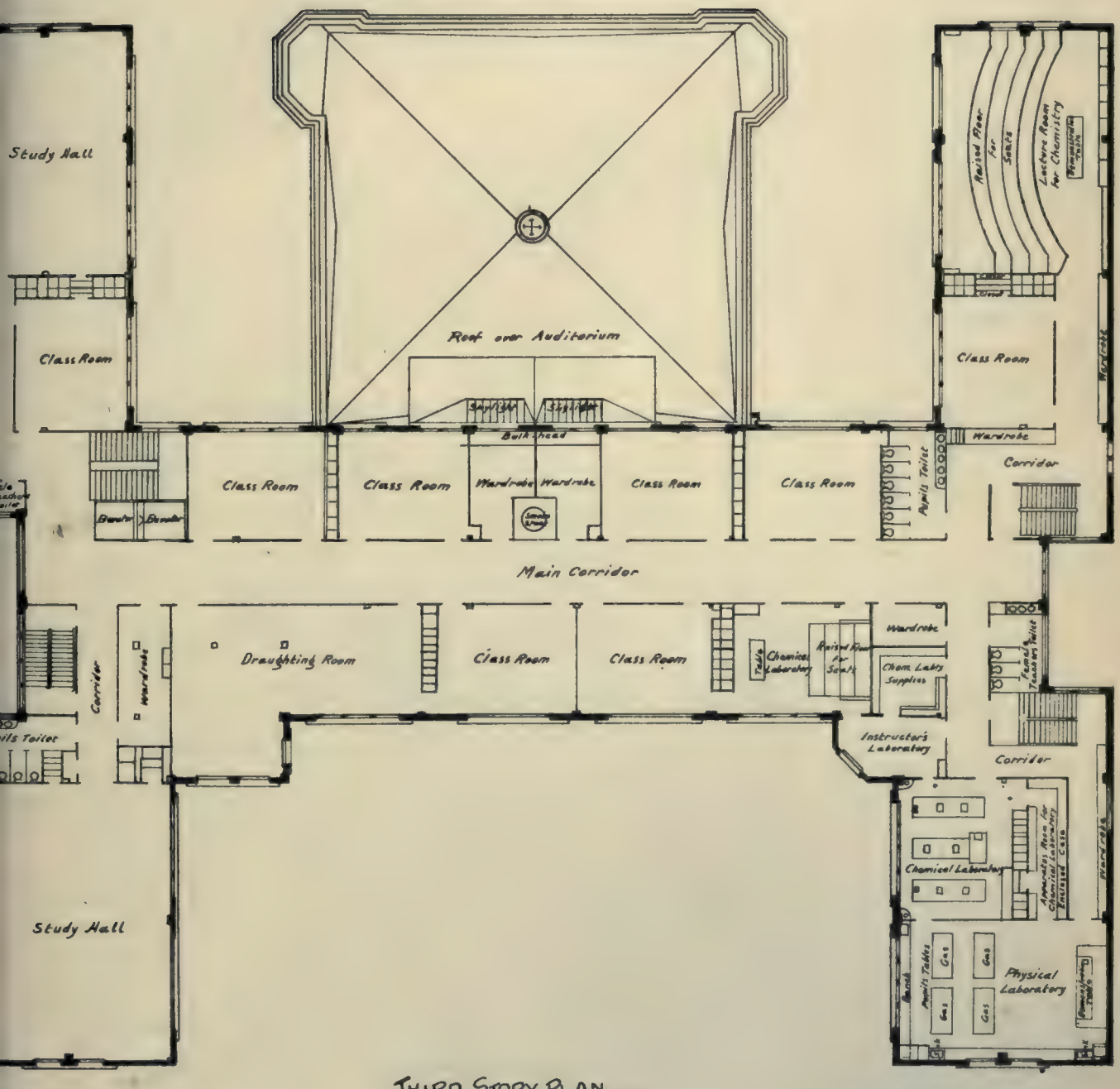

—THIRD STORY PLAN—

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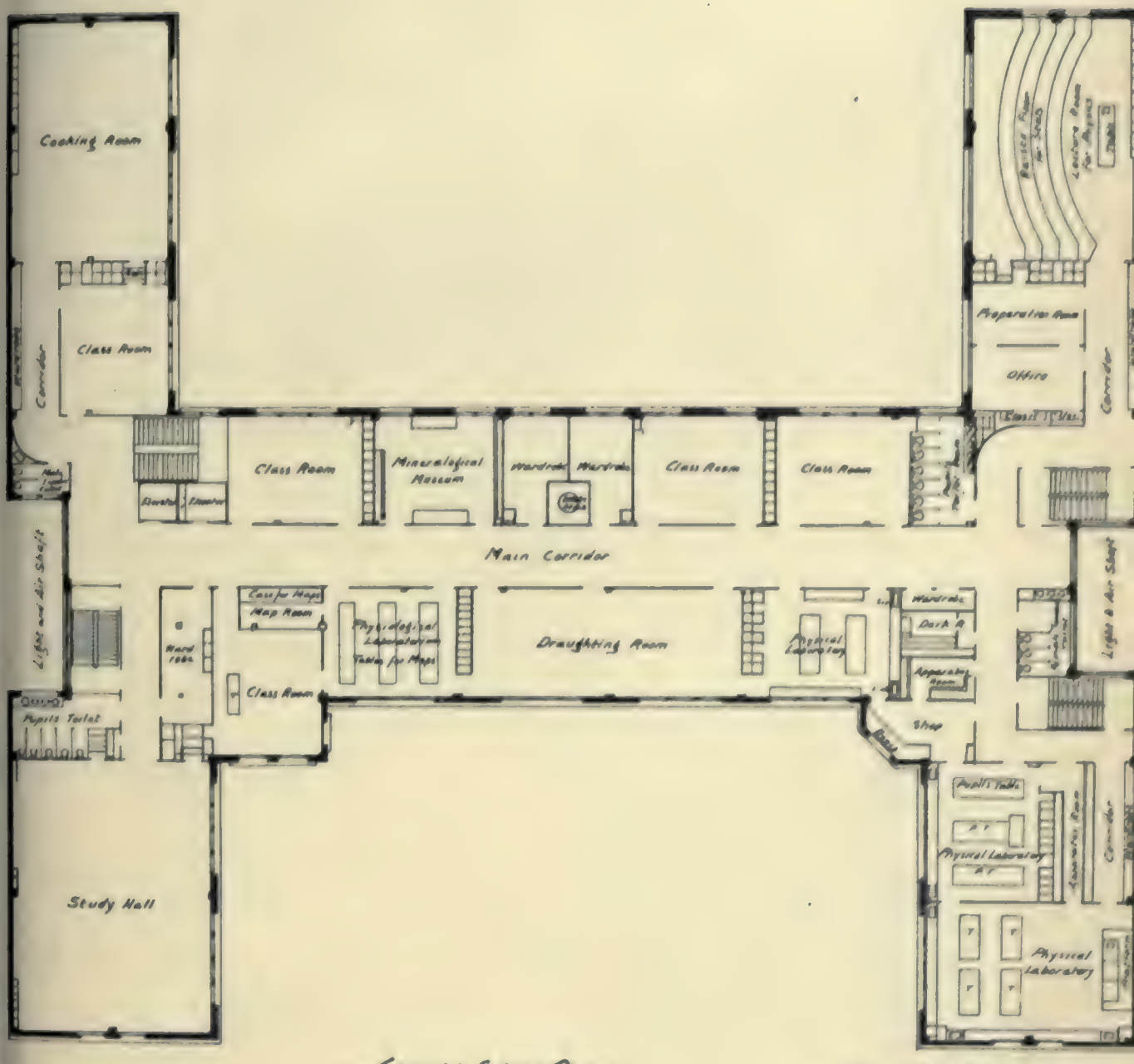

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—FOURTH STORY PLAN—

—Girls High School—
—114th to 115th Sts. bet 7th & 8th Aves—
—Borough of Manhattan, New York City

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Sydney, N.S.W.

LIBRARY
OF THE
UNIVERSITY
OF
CALIFORNIA

—FIFTH STORY PLAN—

—Girls High School—
—114th to 115th Sts, bet 7th & 8th Ave's.—
—Borough of Manhattan, New York City—

C.B.J. Snyder Archt
Supt of School Bldgs.

3842

Photo-lithographed by
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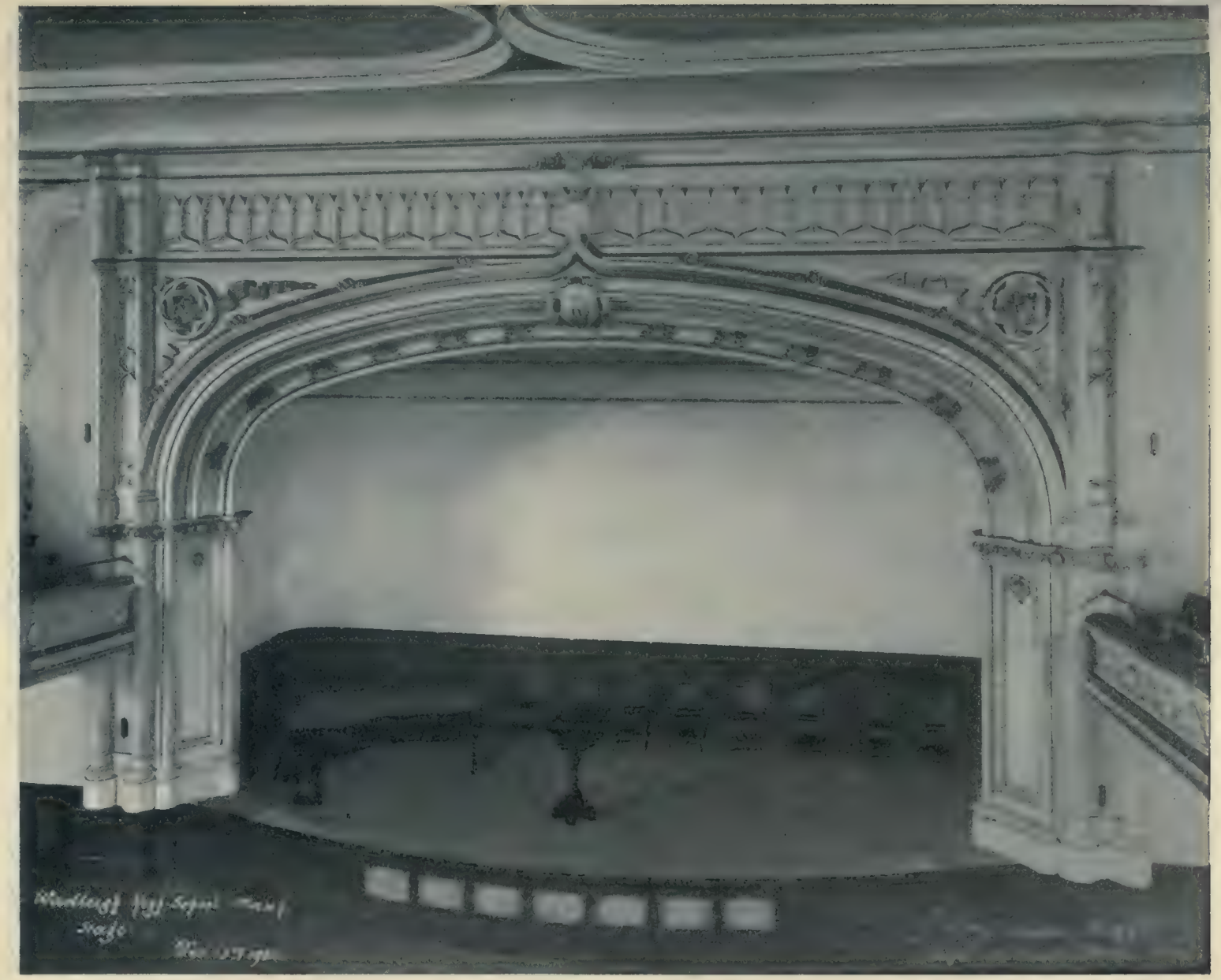
Sydney, N.S.W.

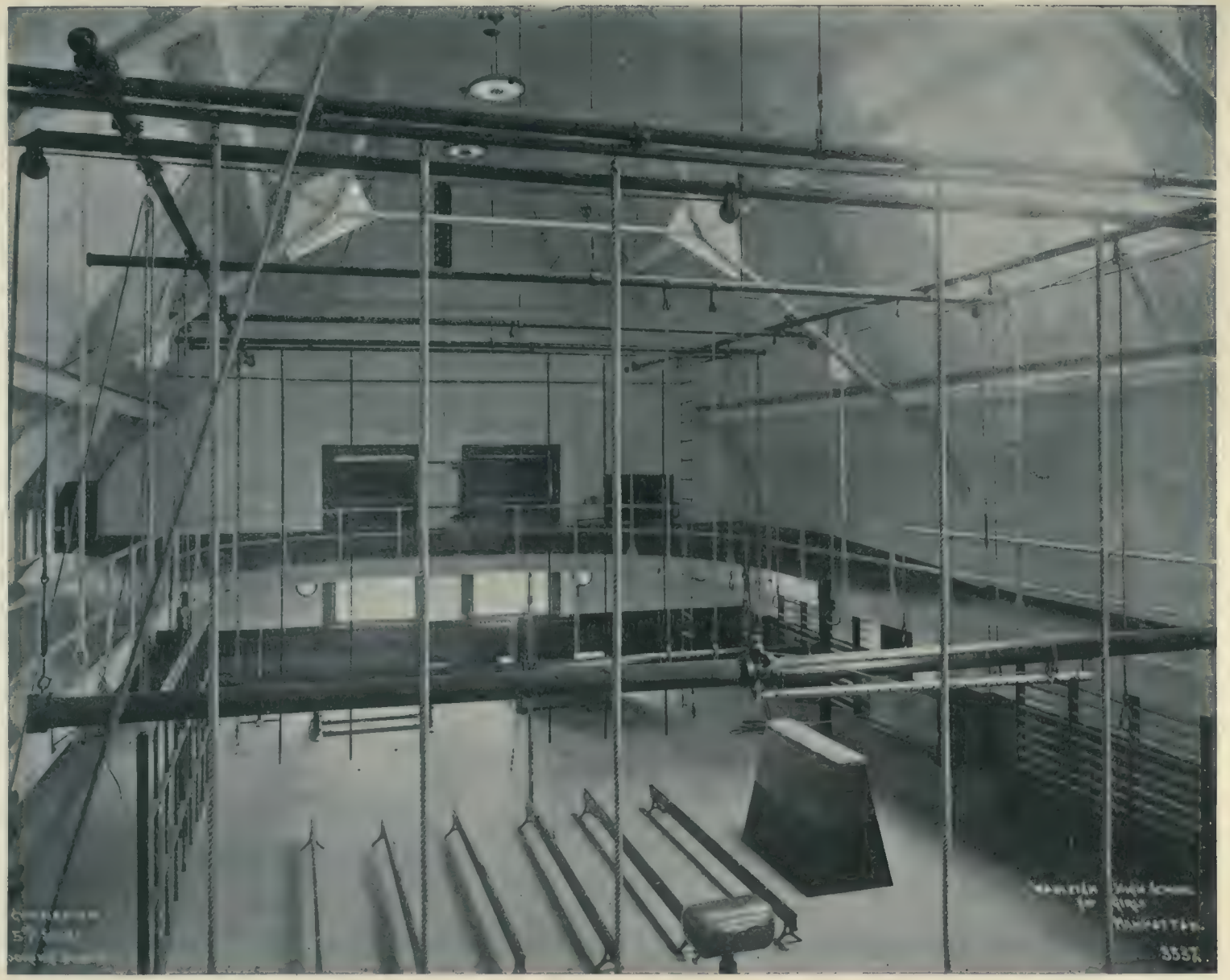
DRAWING-ROOM.

CLASS-ROOM.



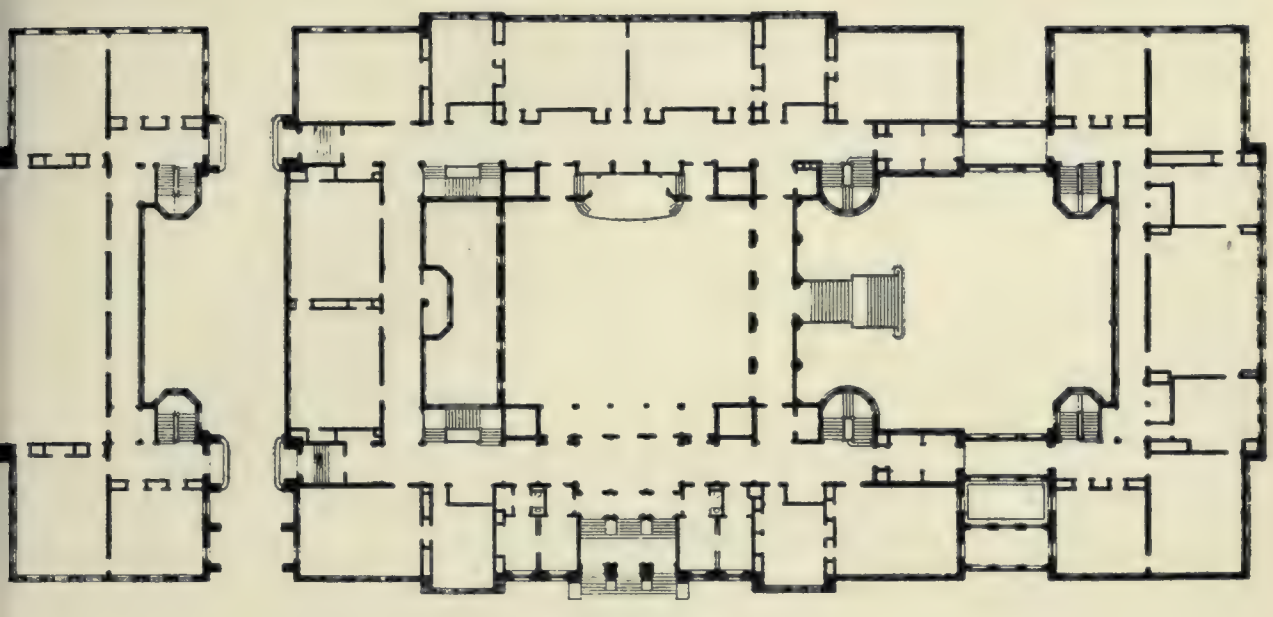
AUDITORIUM.

GYMNASIUM, No. 1, WADLEIGH GIRLS' HIGH SCHOOL NEW YORK CITY.



GYMNASIUM, No. 2, WADLEIGH GIRLS' HIGH SCHOOL NEW YORK CITY.

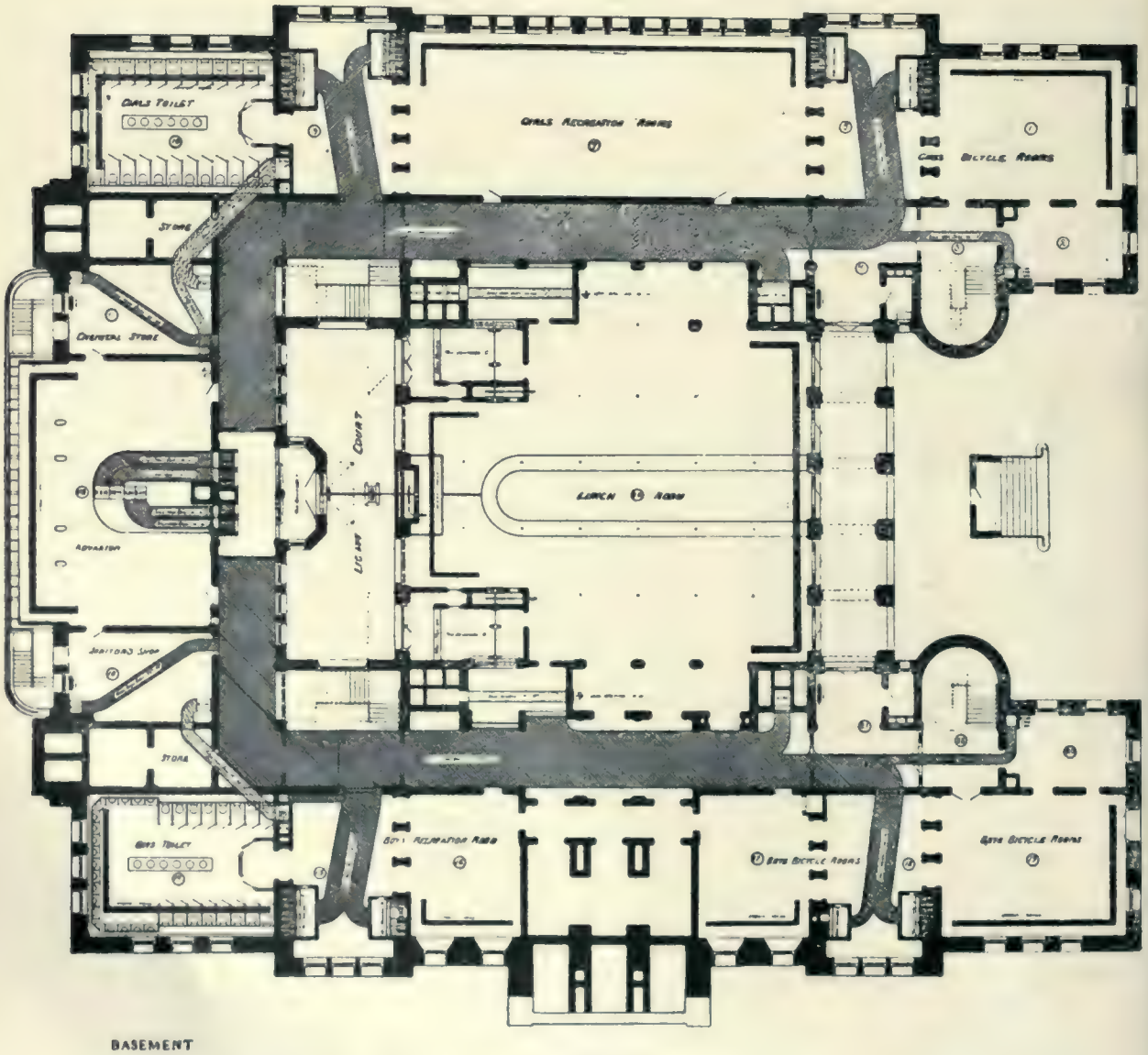
THE POSSIBLE FUTURE HIGH SCHOOL, SPRINGFIELD.



GROUND PLAN.

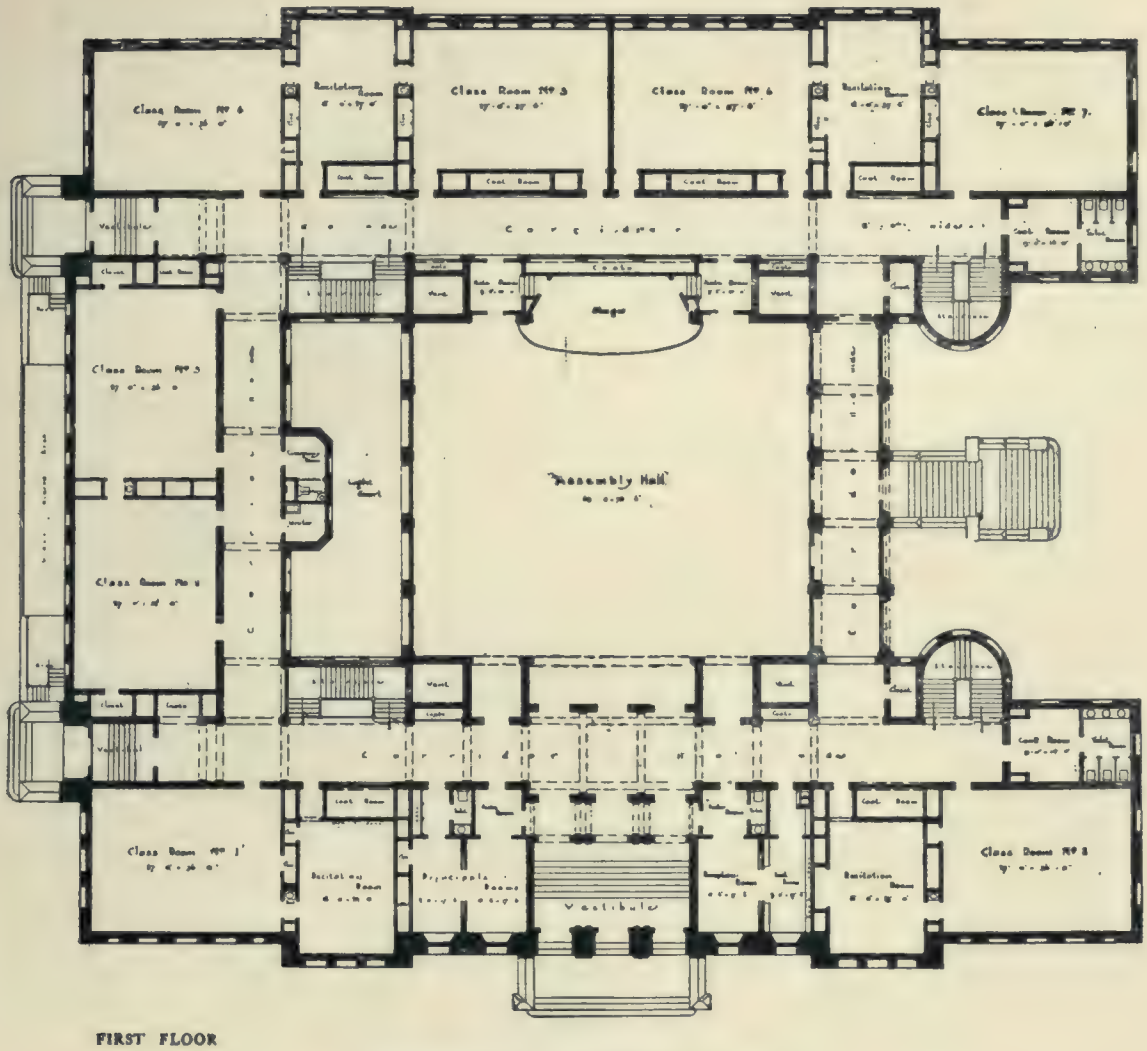
THE HIGH SCHOOL IN THE CITY OF SPRINGFIELD, MASSACHUSETTS, U.S.A.

THE WEST FAÇADE, HIGH SCHOOL, SPRINGFIELD.



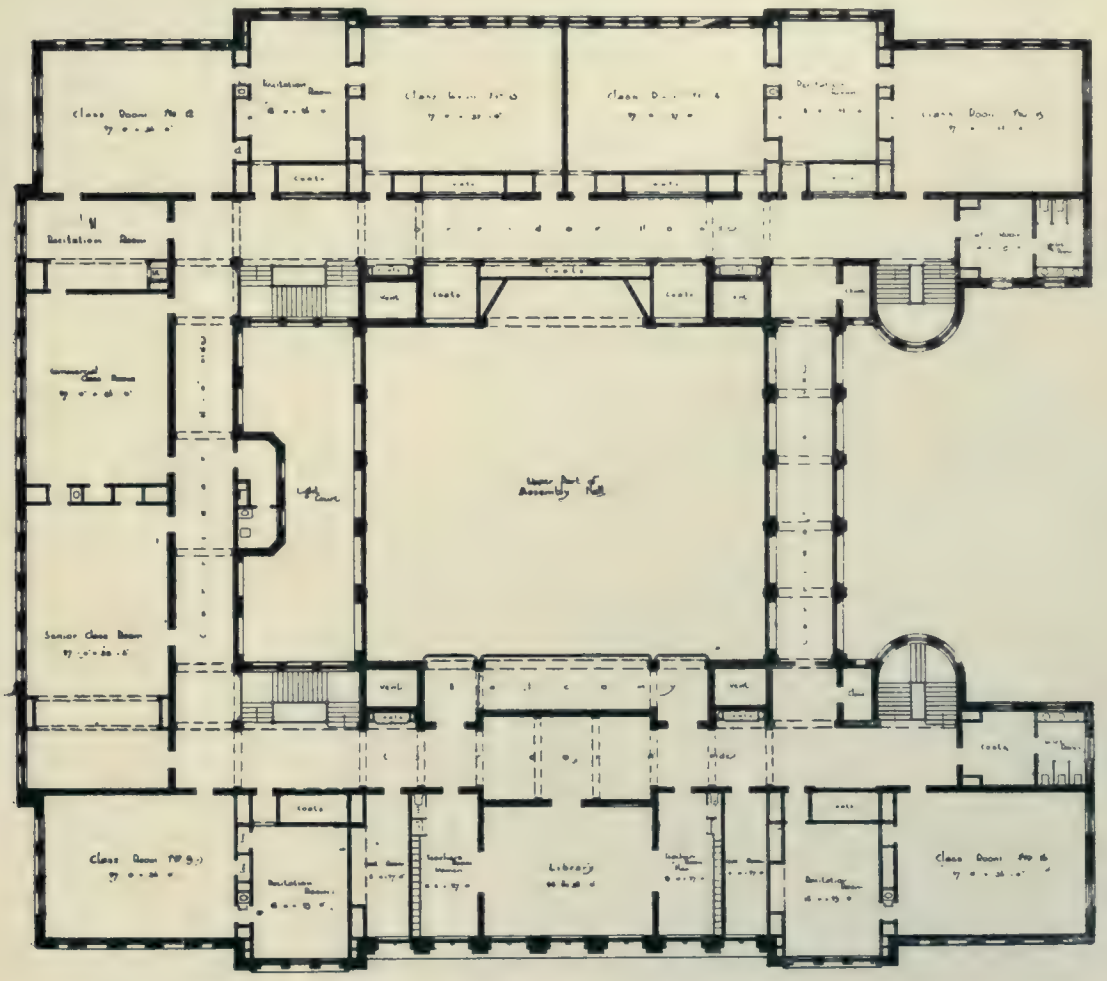
BASEMENT

HIGH SCHOOL, SPRINGFIELD, U.S.A



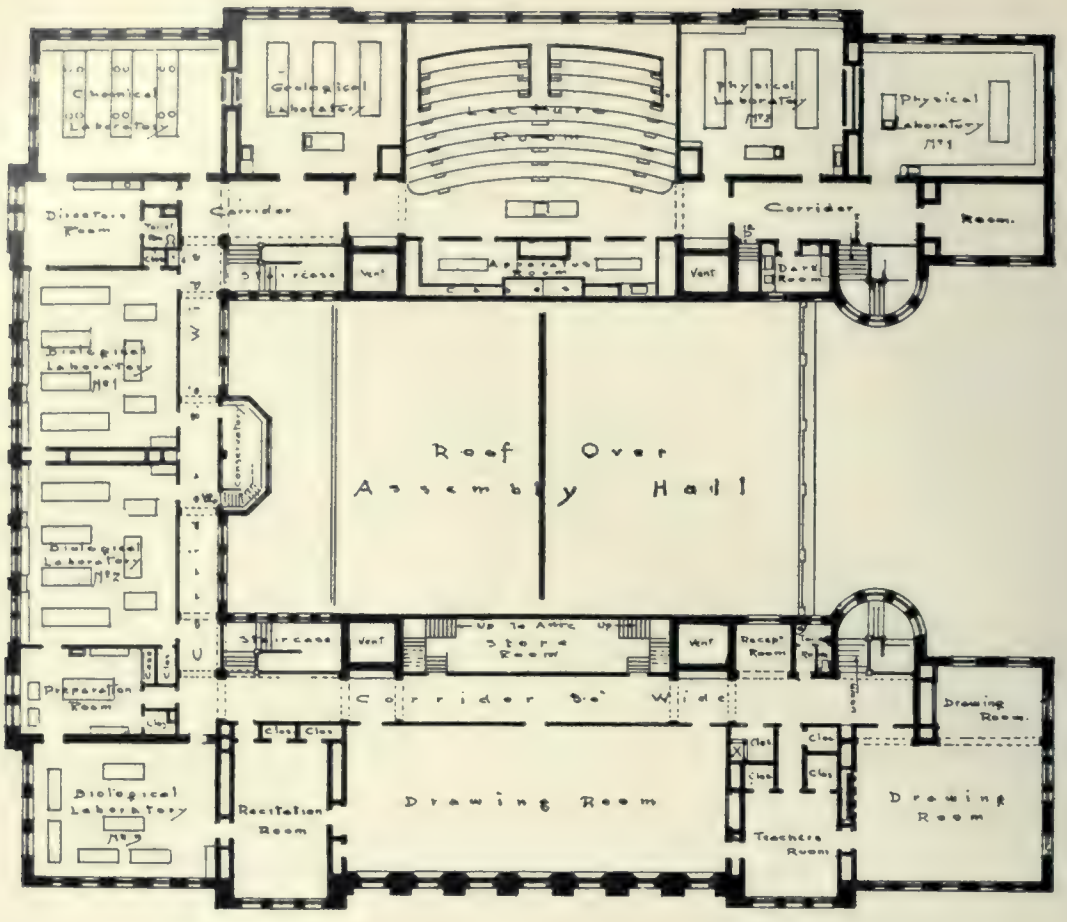
FIRST FLOOR

HIGH SCHOOL, SPRINGFIELD, U.S.A.



SECOND FLOOR

HIGH SCHOOL, SPRINGFIELD, U.S.A.



THIRD FLOOR

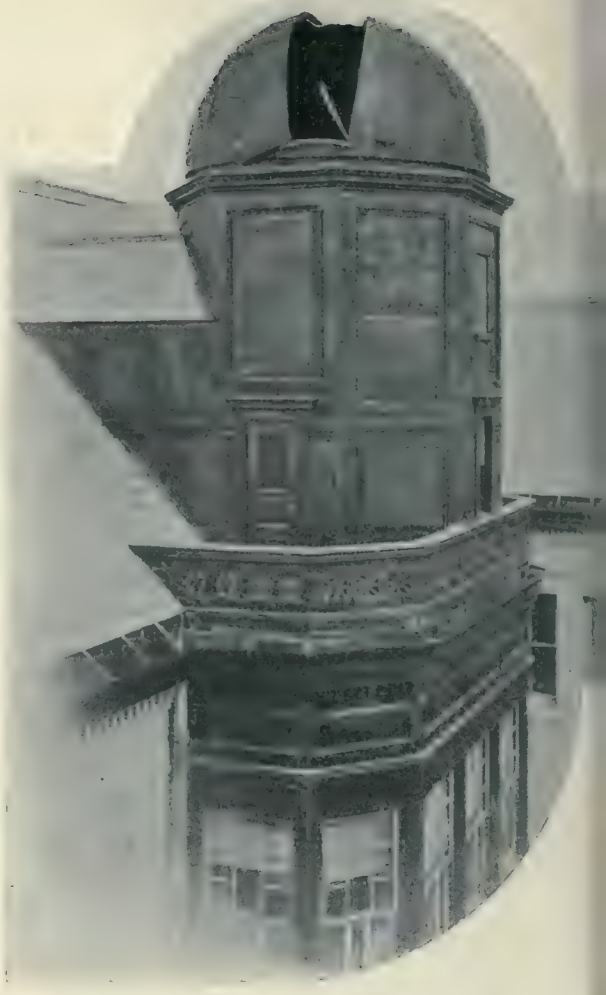
HIGH SCHOOL, SPRINGFIELD, U.S.A.

FOUR IRON STAIRWAYS, HAVING TREADS OF ASPHALT, HIGH SCHOOL, SPRINGFIELD, MASSACHUSETTS, U.S.A.

LOGGIA, HIGH SCHOOL, SPRINGFIELD, U.S.A.

A SPACIOUS VESTIBULE, ORNATE AND ELEGANT, HIGH SCHOOL, SPRINGFIELD.

TRIPLE-ARCHED MAIN ENTRANCE, HIGH SCHOOL, SPRINGFIELD, U.S.A.

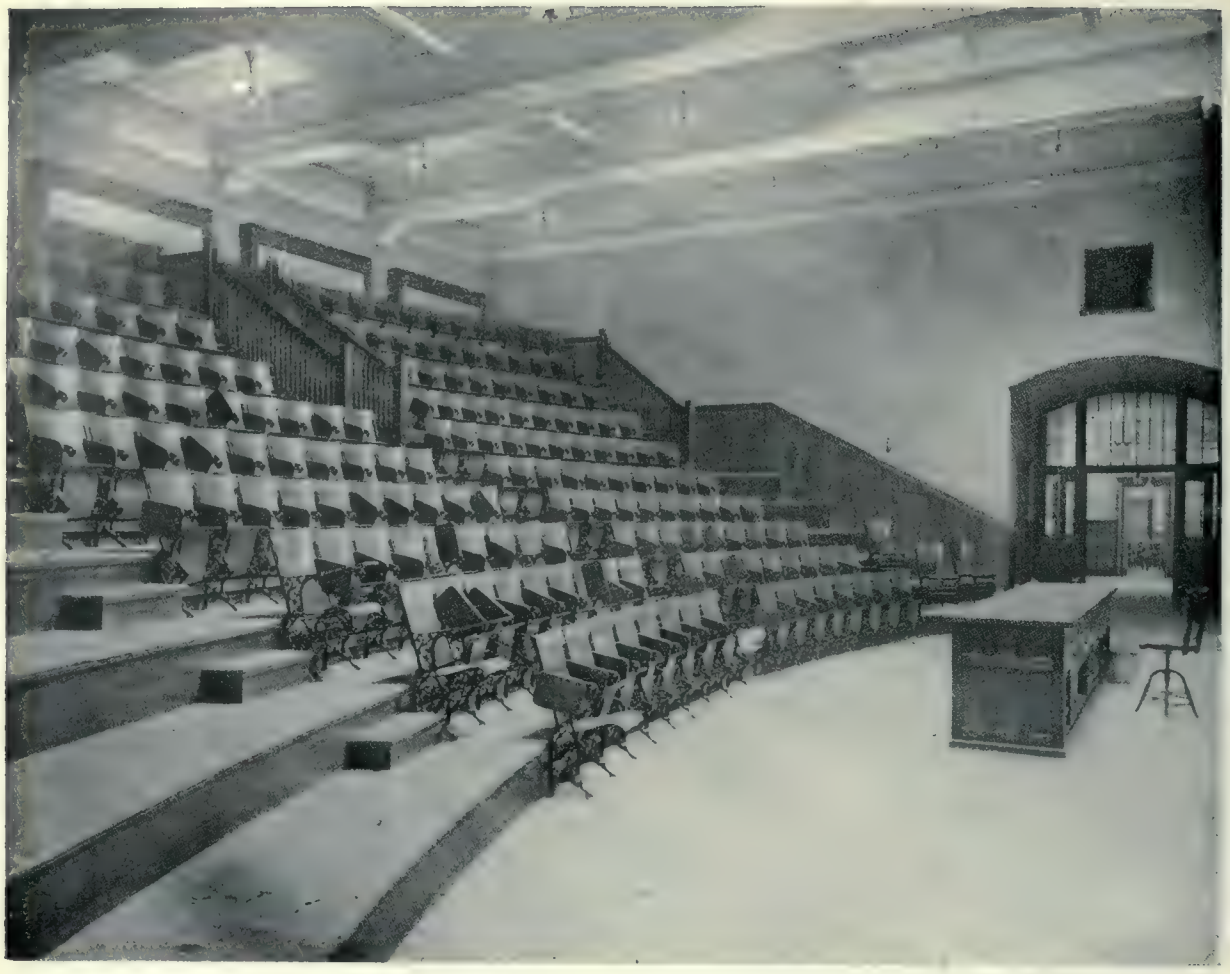


OBSERVATORY TOWER, HIGH SCHOOL, SPRINGFIELD, U.S.A.

THE ASSEMBLY HALL, ABUNDANTLY LIGHTED, HIGH SCHOOL, SPRINGFIELD.

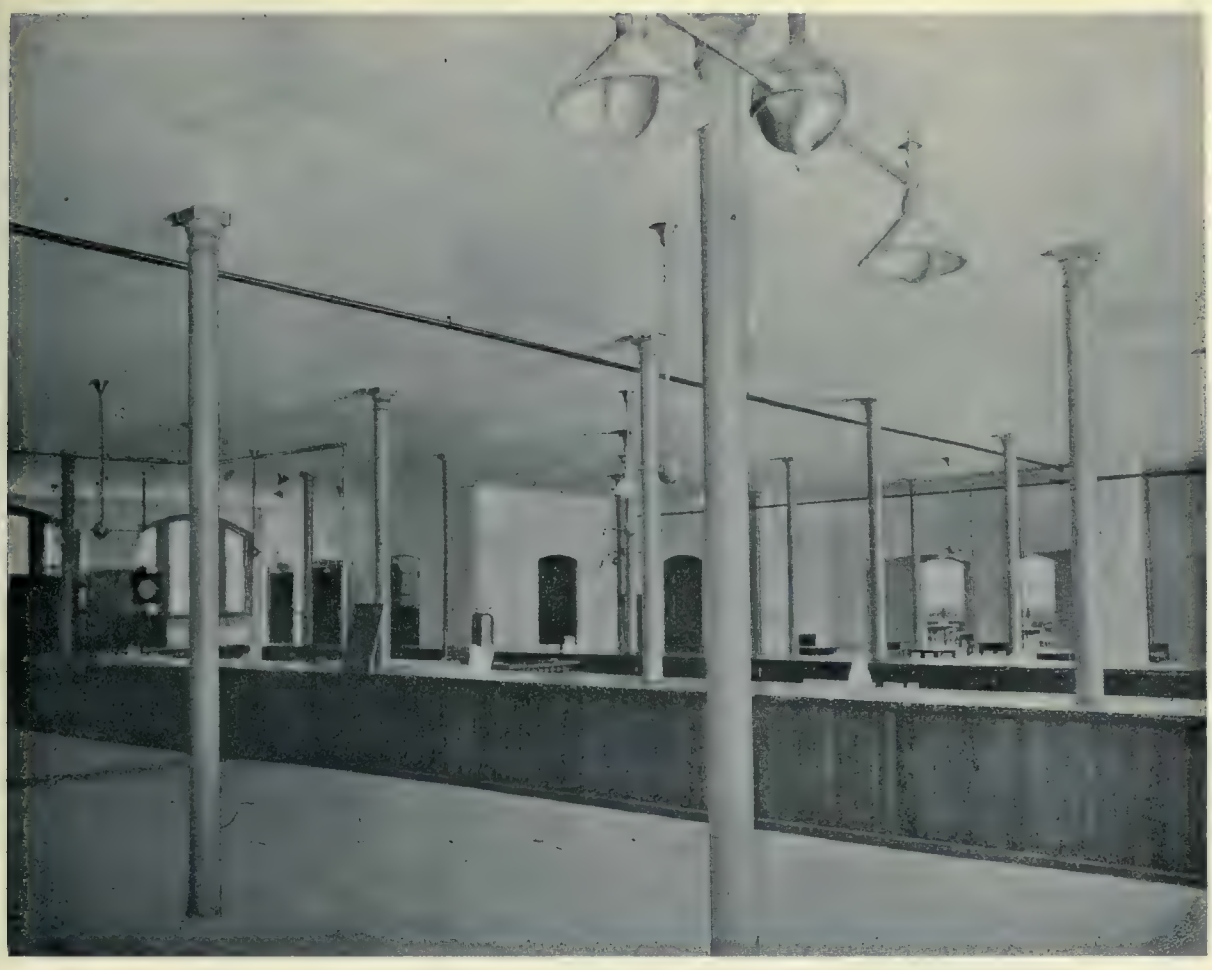
A STUDY ROOM, HIGH SCHOOL. SPRINGFIELD.

THE AQUARIUM, HIGH SCHOOL, SPRINGFIELD.

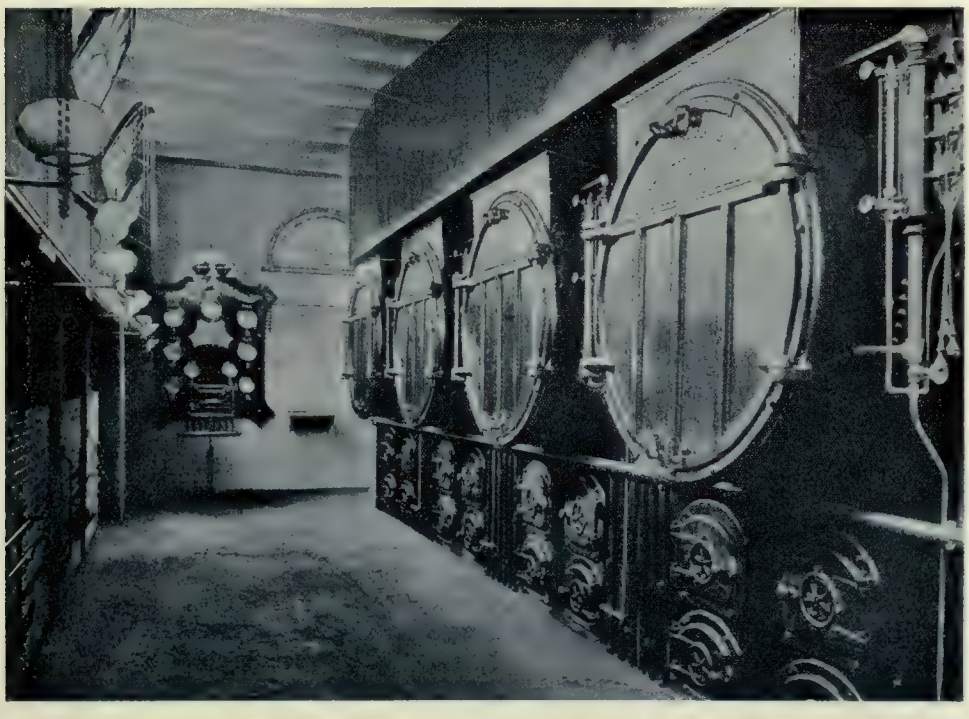


THE LECTURE HALL, HIGH SCHOOL, SPRINGFIELD.

THE LIBRARY, HIGH SCHOOL SPRINGFIELD.



THE LUNCH ROOM OR CAFÉ, HIGH SCHOOL, SPRINGFIELD.

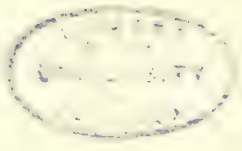


INTERIOR AND EXTERIOR OF BOILER-HOUSE, HIGH SCHOOL, SPRINGFIELD, U.S.A.

CENTRAL HIGH SCHOOL, DETROIT, U.S.A.

CORRIDOR, FIRST FLOOR, HIGH SCHOOL, DETROIT, MICHIGAN, U.S.A.

GIRLS' HIGH SCHOOL, SAN FRANCISCO, U.S.A.



CHAPTER IX.

Outlines of Continental Secondary Educational Systems—Austria.

[G. H. KNIBBS.]

1. *Introduction.*—As is well recognised, educational theory and practice, and the organisation of education, have received a degree of attention in Europe that they never have in our own mother-country, much less here; and further, the possibilities of putting into execution approved ideas have always been much greater on the Continent than in England, owing largely to the fact that the educational system is organised. All able English teachers who have qualified themselves linguistically, and have then thoroughly studied European education, testify very strongly as regards its general excellence. It may be said that a system is likely to be good in proportion as its general scheme and details are under constant review, and subject to constant revision; especially is this true when behind the official effort to realise a good system there exists the powerful support of a well-informed public opinion.

In regard to Continental education it may further be noted that, for a long period, there has been great alertness as to the progress of education in other countries, and a hearty readiness to profit by the educational experience of foreign lands. It is these facts which make European experience so valuable, and which reveal the wisdom and necessity of a wide survey of Continental education as a preparation for the establishment of an aim-point for our own educational effort.

It is proposed, therefore, to devote some attention to a review of the Secondary Education methods of Europe, and Austria and Hungary will be first considered, viz., in this and the following chapters.

2. *State Control of Austrian Secondary Schools.*—The Imperial Patent of 16th November, 1735, for the "organisation and regulation of schools" (Über die Ordnung und Einrichtung der Schulen), by which the Jesuit schools were brought under the State control, was one of the earliest important steps in the establishment of the State control of public education. By the decree of 22nd March, 1760, the "Studien-Hof-Kommission" was called into existence, under the presidency of the Vienna Bishop, Cardinal Migazzi, and that of the celebrated Gerhard van Swieten. This led to considerable improvement in educational organisation, especially in regard to that of the Universities. In 1775 the Gymnasia were organised by Maria Theresa following the scheme of instruction of the Piarists ("clerici regulares scholarum piarum"). The original plan was modified in 1805, and in 1819 all Gymnasia were constituted 6-class schools. The most fundamental development, however, took place on 23rd March, 1848, by the establishment of the Ministry of Public Instruction ("Ministerium des öffentlichen Unterrichts," now the "Ministerium für Kultus und Unterricht"). The history of the organisation of this Ministerium may for the present purpose, however, be ignored. It will suffice to say that a Council of Education ("Unterrichtsrat") was called into existence for the first time in 1863, and entered upon its work in the following year. This Council was an independent body, co-ordinated, however, with the Ministerium, but having the right of initiative. It dealt with pædagogic and related scientific matters. The Council was divided into sections, one of which (6th) was occupied with the Gymnasia, another (7th) with the Realschools, etc. The constitution of the highest authority will be later referred to.

3. *Organisation of Gymnasia and Realschools since* 1848.—In 1849, a Ministerial Councillor, Franz Exner, and a classical philology professor, Hermann Bonitz, drew up a "scheme for the organisation of the Gymnasia and Realschools of Austria" ("Entwurf der Organisation der Gymnasien und Realschulen in Oesterreich"), which was introduced in September, 1849, by the Minister, Count Leo Thun, and came into full force in 1854. This scheme remains to-day the organisation plan of Austrian Secondary Education, notwithstanding that a great many changes have been made in the details of the programmes.

The Realgymnasium was established in 1864, and the Realschools, which had been reorganised in 1851, were reconstituted in 1868. The bill drafted in this year was fully sanctioned in 1869–1874, some minor changes only being made.

The organisation of the Gymnasium was consolidated by the statute of 1867. The programmes or curricula were determined by the decree (Erlass) of 19th July, 1870. The curriculum (Lehrplan) for Lower Austria became the normal programme (Normallehrplan) in 1879, but in 1884 both the Gymnasial and Realschool programmes were thoroughly revised (see,—"Instruktionen für den Unterricht an den Gymnasien," oder "Realschulen"). Since then, minor modifications have again been made.

At the present time the secondary schools of Austria are as follows:—

(1.) Gymnasium (or Classical School).

(2.) Realgymnasium (or Classic and Science School).

(3.) Realschule (or Modern School).

They

They are all known in Austria as middle schools (Mittelschulen) since they constitute an intermediary between the Folkschool and the High school (Hochschule) or University (Universität). The middle schools are of two kinds, viz. :—

(i) Public (öffentlich);

(ii) Private (privat);

the former having the right to authoritatively confer certificates (Zeugnisse) recognised by the State. The various schools are known as "State," "territorial," "Communal," or "Corporation" middle schools. About three-fourths of them are State schools, and many are subsidised, belonging either to the towns or communes or to the ecclesiastical authorities. Some of the denominational schools are even called "Imperial-royal" (*e.g.*, kaiserl. königl. Gymnasium), notwithstanding that in reality they are not strictly State schools. They are all, of course, under the régime and discipline of the State system.

The highest authorities in the matter of education are the Imperial-Royal Ministry for Public Worship and Education, and the Imperial-Royal Territorial School Council (Das kaiserl. königl. Ministerium für Kultus und Unterricht und der k. k. Landesschulrat). These form the immediate supervising authorities for the middle schools of single provinces. The Governor (Statthalter) or President of the territory (Landespräsident) is the Chairman of the Council. In Vienna, Prague, and Lemburg the representative of the Governor is a special higher officer, with the title Vice-President (Vizepräsident d. k. k. Landesschulrats). The Territorial Council exercises a supervision over the whole of the educational machinery, *High schools and Universities, however, being excepted.* This Council, besides the chief of the territorial administration (Chef der Landesregierung) and his representative, includes the "Referenten" for matters concerning the administration and economical management of the schools, and likewise the officers of the administration, etc. The total number of these School Inspectors for the whole of Austria is fifty-one.

4. *The Teaching Staff.*—The immediate head of a school is the *Director* (Direktor), a complete institution, consisting of an upper and lower gymnasium or realschule (Ober- und Untergymnasium, ober- und Unterrealschule), having but one such officer. The Director, together with all the teachers in each institution, constitute a single corporate staff. The Director must himself be one of the teachers; he is the *principal* of the whole school, and is answerable for its general well-being both as regards discipline and the character of its teaching. He sees to the business records, to the returns to the authorities, has the supervision of the collections of the institution, decides as to the acceptance, dismissal, and leave of the scholars, and is the public representative of the school. He disposes the teaching with regard, as far as possible, to the wishes of the instructors, determines the class-teacher for the individual classes, sees to the revision of the class-books, and the catalogue of written work necessary for the pupils. In respect of the latter he is required to take care that the programme remains uncurtailed, but at the same time that the pupils are not overburdened, and generally by visiting the various classes during the progress of the teaching, he is expected to see that the instruction, discipline, etc., fulfil the proper conditions. The draft of the organisation thus refers to his duties :—"Der schwierige Beruf des Direktors, das Wohl der ganzen Anstalt nach innen und aussen stets in Auge zu halten, erfordert, ausser grütdlicher Kenntiss und didaktischer Sicherheit in den von ihm selbst vertretenen Lehrgegenständen, vor allem eine richtige Einsicht in den Zweck der ganzer Bildunganstalt, einer genaue Würdigung der einzelnen Elemente wissenschaftlicher und sittlicher. Bilding und einen pädagogischen Takt in der Wahl der erforderlichen Mittel: denn nur unter dieser Voraussetzung wird die von ihm zu erwerbende stete genaue Kenntnis des wirklichen Zustandes der Schule ihn in den Stand setzen, Mängel entfernen zu wollen und der Erreichung des Zieles mit Erfolg zuzuarbeiten."[1]

The teacher or professor in each subject (Lehrer) is required at every stage of the educational development to keep before him the necessity of establishing character as well as of imparting knowledge; he must *instruct* so as to *educate*.[2] It is held to be essential, therefore, that the teacher himself should be of steady moral character; further, that he should be a *teacher* by virtue of inclination and information, adequately appreciating his high educative mission (seine höhe erzieherische Aufgabe). He is expected to carefully prepare beforehand his lessons, so as to be independent of text-books. At the same time, he does not lose sight of the text-books, since they are the basis of the pupil's home-work (Pensum).[3] Great stress is laid upon the importance of a clear apprehension, and many-sided association of the elements of instruction, on the part of the pupils, and upon the development of a thorough-going mental self-activity. Only those elements of knowledge which strengthen the power of understanding are deemed to have that lasting influence, for these alone will cause the educated pupil afterwards to wisely determine and follow with interest his further studies. For this reason mere passive receptivity, and mere cultivation of the memory, are deemed of relatively small moment, while the self-activity of the pupil, the deepening of his liking for study and the strengthening of his insight, are regarded as of the highest importance.[4]

The

[1] The difficult vocation of the Director, viz., the keeping of the welfare of the whole institution continually under his eye, both from within and without, demands, besides thorough knowledge and didactic certainty as regards the subjects represented by himself, an exact insight into the purpose of the whole educational establishment—an accurate appreciation of the individual elements of scientific and ethical education, and pædagogic tact in selecting the necessary means. It is only on this hypothesis that the acquired and continually exact recognition of the actual condition of the school will enable him to remove defects and to uniformly work toward the attainment of the ultimate aim with success.

[2] Die Jugend auf jener Entwicklungastufe, auf der sich die Fundamente des Charakters sowohl als des Wissens für das ganze Leben allmählich festlegen, unterrichtend zu erziehen.

[3] The home-lessons are known as "Pensa," that done in the school as "Kompositionen."

[4] The following extracts from the organisation scheme (Organisationsentwurf) are of interest; they are given in the original language :—

"Das Gymnasium—dasselbe gilt natürlich auch von der Realschule—hat seinen Schülern einen Reichtum mannigfacher Kenntnisse aus verschiedenen Gebieten des Wissens zu geben; aber die Kenntnisse an sich sind nicht der einzige, noch der letzte Zweck; *das Gymnasium will vielmehr seine Schüler zu einer allgemeinen, möglichst gleichmässigen Bildung erheben.* Zur Bildung nun gehören allerdings notwendig Kenntnisse, aber ein Element der Bildung werden die Kenntnisse erst dadurch, dass sie nicht ein toter Schatz in der Seele des Besitzenden geblieben, sondern durch Klarheit in Auffassung des einzelnen und Vielseitigkeit der Verbindung, sowohl innerhalb desselben Gebietes des Wissens als unter den verschiedenen

The teachers are of two kinds, viz. :—The regular teacher (ordentlich Lehrer), and the accessory teacher (Nebenlehrer). The former, after their nomination, are required to make a three-years' probation, after passing which they are definitely confirmed in their teaching office, the title Professor being conferred.[1] The latter teach such subjects as writing, singing, modern languages, gymnastics, drawing, stenography, etc.

Those who desire to qualify for the office of teacher have to devote one year as probationary candidate (Probekandidat), and remain in such position till their nomination as full or provisional teachers (Hilfslehrer, Supplenten). This matter will be referred to again.

The hours that each is expected to devote to teaching per week are as follows :—

Director, Upper Gymnasium	... ...	5—8 hours per week.
„ Lower „	... ...	10—14 „
„ Real „	... ...	10—14 „
„ Upper Real school	... ...	6—8 „
„ Lower „	... ...	8—10 „
Teachers of languages	... ...	17 at most.
„ other subjects	... ...	20 regularly.
„ Drawing	... ...	24 at most.

Teachers have rank in the State Service as follows :—

Directors, VII ; Professors, VIII ; Teachers, IX.

The positions and organisation of the teaching staff were determined by the laws of 1870 and 1873

5. *Qualification for Teaching.*—The Austrian educational authorities are fully cognisant of the mportance of guarding against a merely formal mechanicalism (die Gefahr eines schablonenhaften mechanismus) in following a curriculum. This danger is met by demanding that all teachers shall be liberally educated.

In the principal cities of Austria there are examination-commissions (Prüfungskommissionen) at the seats of the Universities, *e.g.*, Vienna, Innsbruck, Graz, Prague, Lemberg, Czernowitz.

The candidates are required to produce :—

(*a*) The Maturité certificate of having qualified for the Universities or technical high schools (Zeugniss der Maturität).

(*b*) The proof of the four years devoted to philosophy (arts).

During these studies, the work must have been appropriate to the branches of teaching taken up ; thus a candidate for a post in the faculty of natural science must have taken part in the practical laboratory work in the proper institution ; a candidate as teacher of descriptive geometry must have devoted at least two years regularly to the subject at colleges where descriptive geometry is taught ; a candidate for a post as teacher in chemistry must have spent three years as ordinary student in the chemical department of a technical high school ; and so on.

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verschiedenen Wissensgebieten, ein lebendiges Eigentum des Geistes geworden sind, über dessen Verwendung er in freier Herrschaft gebietet. Diese Herrschaft über den eigenen Besitz, wie sie die vollste Selbsttätigkeit des Geistes ist, wird auch nur durch eigene Tätigkeit erworben, eine Tätigkeit, welche dem aufnehmenden Erwerben nicht erst folgen darf, sondern dasselbe auf jedem Schritt begleiten muss. Es ist demnach als Grundsatz im ganzen Lehrplan angesehen, *dass in den einzelnen Gebieten nicht die Menge der Kenntnisse an sich*, ja nicht einmal die Sicherheit dieser Kenntnisse allein den Massstab des zu Leistenden bilden dürfe, sondern diejenige Aneignung derselben durch die eigene Tätigkeit der Schüler, wodurch aus dem blossen Wissen ein Können wird. *Nur diejenigen Kenntnisse, welche zu einer solchen Kraft des Könnens in ihrem Gebiete erstarkt sind, haben einen dauerhaften Wert über die Zeit der Schulforderungen hinaus*, und geben zugleich die Sicherheit, dass der so gebildete Schüler auch dann mit Interesse und richtiger Wahl fortstudieren werde, wenn die äusserliche Nötigung dazu aufgehört hat. Daher haben die Lehrer es sich zur Pflicht zu machen, *nicht bloss eine mehr passive Rezeptivität der Schüler zum Einlernen der erforderlichen Kenntnisse in Anspruch zu nehmen*, sondern zugleich die völlige Aneignung dieser Kenntnisse durch die eigene Tätigkeit der Schüler zu erstreben.

Im allgemeinen folgt hieraus zunächst, dass ein Unterricht, welcher ausschliesslich oder auch nur vorherrschend ein blosses Vortragen der Lehrgegenstände wäre, etwa nach Art des Universitäts-Unterrichts, dem Standpunkte der Gymnasien völlig unangemessen ist. Gerade im Gegenteil fordert dieser Standpunkt, dass den Schülern so wenig Zeit als möglich gelassen werde zu einem bloss passiven Zuhören, welches jeden Augenblick in Gedankenlosigkeit oder Zerstreutheit übergehen kann, und wobei der Lehrer spät erfährt, wie oft seine Rede missverstanden worden, während der ganze Unterricht jener Erregung und Freudigkeit der Schüler entbehert, welche in diesem Alter nur da entsteht, wo der Unterricht ein fortwährendes Arbeiten des Schülers ebensowohl als des Lehrers ist.

Die Aneignung der Kenntnisse durch die eigene Tätigkeit der Schüler zu bewirken, muss ferner vornehmlich die Aufgabe der Lektionen selbst sein. Hiedurch soll keineswegs der Wert des häuslichen Fleisses und der Aufgaben für ihn herabgesetzt werden, im Gegenteil fordert eine gesunde Schuleinrichtung, dass die Schule ihre Wirksamkeit auf den Schüler über die Zeit der Lehrstunden hinauserstrecke, und in der Regel für jede folgende Lehrstunde eine Leistung, und sei sie auch noch so gering und unbedeutend, zur bestimmten Pflicht mache. Aber in den Lehrstunden selbst und durch dieselben muss der Schüler zu arbeiten gelernt haben, um zu Hause ohne des Lehrers Hilfe arbeiten zu können. Dies gilt in besonders hohem Grade für die untersten Lehrstufen : denn auf diesen ist es eine Hauptaufgabe, eine solche Aufmerksamkeit der Schuler zu erreichen, dass der Gegenstand des Unterrichts der Hauptsache nach in der Stunde selbst gelernt wird, *und die häusliche Arbeit nur das feste Einprägen des schon im wesentlichen Gelernten zu vollenden hat.* Mit dem Aufsteigen in den höheren Lehrstufen gewinnt allerdings die häusliche Betätigung der Schüler eine selbständigere Bedeutung ; aber für die gesamte Schulzeit, von der untersten Klasse bis zur obersten, bleibt es unerlässliche Forderung an die Schule, dass sie, was für die Anleitung des Schülers zu seinen eigenen häuslichen Arbeiten erforderlich ist, alles selbst in ihren Lehrstunden leiste.

Von dem elterlichen Hause hat die Schule nur die Unterstützung zu erwarten und zu beanspruchen, dass es die Schüler zu guter Zucht, zu Gehorsam und Fleiss anhalte ; sie darf von ihm aber, wofern nicht etwa ein Schüler besondere Unterbrechungen im Unterrichte erfahren hat, nicht irgend eine Unterstützung oder Anleitung für die Arbeiten der Schüler fordern." [The passages italicised are not emphasised in the original.]

[1] Wird ihnen der Professertitel zuerkannt.

The *special* examination of the candidates covers the following group of subjects :—

(*a*) *Classical Philology, i.e.*, the Latin and Greek languages as principal subjects, and mother-tongue as the accessory subject.

(*b*) The *German language*, or other mother-tongue as principal subject, and Latin and Greek as accessories.

(*c*) *Geography and History* as principal subjects.

(*d*) *Mathematics and Physics* as principal subjects.

(*e*) *Natural History* as principal subject, and mathematics and physics as accessories.

(*f*) *Philosophy*, in connection with either Greek as principal subject, and Latin as accessory, or with mathematics as principal subject and physics as accessory.

Restricting the consideration to the Real schools there are outside Group (*d*) also the following :—

(*g*) *Modern Philology*, that is, one of the modern cultivated languages, French, English, Italian (and for certain institutions where the mother-tongue is not German, also the German language), and German or the vernacular as principal subjects.

(*h*) *English* as principal subject, and either French or the vernacular as accessory.

(*i*) *Mathematics* as principal subject in connection with either descriptive geometry, or with geometrical drawing and physics as accessories.

(*j*) *Natural History and Chemistry*, either as associated principal subjects, or one of them as principal subject in connection with *two* accessories, in which any two of mathematics, physics, chemistry, natural history and geography may be taken at pleasure, and geometrical drawing may be taken only with mathematics.

Although the scientific and special education of the secondary school teacher (Mittelschullehren) provided for by means of lectures, and particularly by means of seminaries and institutes, introduction to practical pædagogy is not provided for during the studies at the Universities. At various Universities it is true that there are chairs in pædagogy, and pædagogic seminaries; these, however, are restricted to work in the province of pædagogy as a subject of study and research, such as written theses and discussions. In Prague, however, Professor Dr. O. Willmann[1] has attempted to complete the theoretical work of the seminary by practical tests in teaching. So also has Professor Leon Kulczyński in Cracow.[2]

In Austria one year is always spent in a public gymnasium or "Real school," of the character which embraces the subjects in which the candidate has technically prepared himself. During this year a probationary teacher, or rather candidate (Probekandidat), is specially associated with a professor for the sole purpose of technical guidance in the duties of his office. One and the same professor may not have more than two candidates at the same time.

During the first half of this year (1st semester) the candidate observes the instruction given by the professor with whom he is associated, and may even take part in the instruction itself in as many classes as possible. He becomes acquainted with the inner organisation of the gymnasium or real school, etc., its curriculum, its equipment, the use and care of its scientific collections and apparatus, with its discipline, with its literature, with important didactical-pædagogical treatises, and with everything that appertains to the whole scheme of teaching, and the general duties of his office.

In the second semester the candidate is assigned to independent teaching-duties, but always under some supervision of his associated professor, more particularly in regard to everything concerning the final classification of the pupils. Should the candidate devote more than six hours weekly to this probational work and practical teaching in the school he is entitled to remuneration. During the whole year he discusses various questions with the professor with whom he is associated, and he elaborates such matters occasionally in writing. This is done partly regularly, and partly as circumstances suggest, and on an average about once a week.

The practice of observing teaching, of drafting out sketches of lessons, of taking part in the actual teaching and in all conferences of the teaching-staff in which he is entitled to speak (though not to vote), is an important part of the qualification for practical work.

6. *Importance of System of Qualification.*—The scheme of qualification outlined has certain characteristics worthy of special attention, the most important being thoroughness and the delimitation of the field to be covered by any individual teacher, as shewn in the preceding section. In fact, it is this delimitation which ensures thoroughness of knowledge, and real efficiency in teaching.

To the feature, that no secondary teacher ever professionally teaches subjects which he has not systematically studied, is due the fact that the instruction given in Austrian secondary schools is of a high character. It has already been mentioned, viz., in the Interim Report, that the equipment in respect of charts, maps, and diagrams, zoological museum specimens, chemical and physical apparatus, etc., leave little to be desired. The whole may be summed up by saying that the scheme provides for a very satisfactory professional training, and supplies the necessary paraphernalia to enable the well-educated teacher to discharge the duties of his office. The two elements are satisfactory, viz., personnel and material: the teacher has been well-educated; he has the apparatus necessary to make his teaching efficient. He understands scientific subjects by that direct touch therewith that comes through laboratory practice.

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[1] Professor Dr. Otto Willmann is the Ordentlich Professor in Philosophy and Pædagogy in the "k.k. Deutsche Karl-Ferdinand Universität" of Prague, founded in 1348. The Commissioners are under great obligations to Professor Willmann for courtesy and assistance during their visit to Prague.

[2] Professor Leon Kulczyński's subjects are Pædagogy and Didactics (Pädagogik und Didaktik) in the Jagelloni University, Cracow, Galicia. [Uniwersytet Jagiellońki w Krakowie.]

7. *The Curricula.*—A slight indication of some of the stages of secondary education in Austria and also in Hungary was given in Chapter VI, secs. 37 and 42 of the Interim Report in connection with education up to 14 years of age. The following are the gymnasium programmes for 1894 and 1814, the latter with later modifications. The former is given merely for the sake of comparison :—

Curriculum of the Gymnasium, according to the Organisation-scheme of 1849.

(*Lehrplan der Gymnasien nach dem Organisationsentwurf*, 1849.)

Subjects.	Classes.								
	I.	II.	III.	IV.	V.	VI.	VII.	VIII. [1]	Total.
Religion	2	2	2	2	2	2	2	2	16
Latin	8	6	5	6	6	6	5	5	47
Greek	...	...	5	4	4	4	5	6	28
Mother-tongue (*e.g.*, German) ...	4	4	3	3	2	3	3	3	25
History	...	3	3	3	4	3	3	3	25
Geography	3								
Mathematics	3	3	3	3	4	3	3	...	22
Philosophic Propædeutics ...	...	...	.....	...	...	...	...	2	2
Natural History	2	2	I. Sem. 3	...	2	...	...	3	21
And Physics	...	...	II. Sem. 3	3	...	3	3	...	
Total.....	22	20	24	24	24	24	24	24	186

This was altered in 1855 and again in 1884. The 1884 curriculum has since been slightly modified and now stands as hereunder :—

Curriculum of the year 1884, having regard to later modifications.

(*Lehrplan vom Jahre*, 1884, *unter Berücksichtigung der späteren Modifikationen*).

Subjects.	Lower Gymnasium.			Upper Gymnasium.					
	I.	II.	III.	IV.	V.	VI.	VII.	VIII. [1]	Total.
Religion	2	2	2	2	2	2	2	2 (3)	16 (17)
Latin	8	8	6	6	6	6	5	5	50
Greek	...	...	5	4	5	5	4	5	28
German (or Mother-tongue) ...	4	4	3	3	3	3	3	3	26
Geography	3	2	3	2	3	4	3	3	27
And History	...	2		2					
Mathematics	3	3	3	3	4	3	3	2	24
Philosophic Propædeutics ...	...	...	.....	...	...	...	2	2	4
Natural History	2	2	I. Sem. 2	...	2	2	...	...	10
Physics	...	...	II. Sem. 2	3	...	...	3	3	11
Writing (not always obligatory)	(1)	...	.....	...	...	...	...	...	(1)
Drawing (not obligatory in all Gymnasiums).	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(24)
Gymnastics do ...	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(16)
	22	23	24	25	25	25	25	25	194
	(23)	(28)	(29)	(30)	(30)	(30)	(30)	(31)	(236)
	(28)	...	.....	...	...	...	...	...	.....

The bracketed numbers denote the time, including the non-obligatory subjects.

The special objects of the Real School are—(i) A general education, with special regard to mathematical and natural science subjects ; and (ii) a preparation for the superior schools—*e.g.*, the Polytechnica, the Academies of Forestry and Mining, High School for Agriculture, etc. The Real School is divided into the Lower and Upper Real School.

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[1] Age of entrance, 10 years.

The present normal curriculum for Lower Austria is as follows:—

Curriculum for Lower Austria with recent modifications.

(*Normallehrplan [Lehrplan für Niederösterreich] für Realschulen vom Jahre*, 1879, *unter Berücksichtigung der späteren Modifikationen.*)

Subjects.	I.	II.	III.	IV.	V.	VI.	VII.[1]	Total.
Religion	2	2	2	2	(1)	(1)	(1)	8 (11)
Language-teaching (German)	4	3	4	3	3	3	3	23
First modern language (French	5	4	4	3	3	3	3	25
Second modern language (English)	...	...	...	...	3	3	3	9
Geography	3	2 } 4	2 } 4	2 } 4	...	...	...	9 } 24
And History	...	2 }	2 }	2 }	3	3	3	15 }
Mathematics	3	3	3	4	5	4	5	27
Natural History	3	3	...	...	3	2	3	14
Physics	...	...	4	2	...	4	4	14
Chemistry	...	...	...	3	3	3	...	9
Geometrical Drawing and	...	3	3	3	...	...	...	9 } 18
Elements of Descriptive Geometry	...	...	...	...	3	3	3	9 }
Freehand Drawing	6	4	4	4	4	3	3	28
Caligraphy	1	1	...	...	...	...	...	2
Gymnastics	2	2	2	2	2	2	2	14
Total	27	27	28	28	30 (31)	31 (32)	30 (33)	201 (204)

Besides the subjects enumerated, modelling, stenography, singing, analytical chemistry, are often taught, but are not necessarily obligatory. So also are formal logic, and the elements of national economy taught in some of the real schools. The following compilation will shew the treatment of different subjects in different parts of Austria :—

Subject.	I.	II.	III.	IV.	V.	VI.	VII.	Total.	Locality.
Religion	2	2	2	2	...	...	...	8	Lower Austria, Steiermark, Kaernten, Vorarlberg, Trieste.
	2	2	2	2	1	1	1	11	Tyrol, Silesia, Istria, Krain, Dalmatia.
	2	2	2	2	2	2	2	14	Bohemia, Mähren, Galicia, Upper Austria, Salzburg, Bukowina.
German	5	4	4	3	3	3	3	25	Lower Austria, Salzburg, Tyrol (Rovereto).
	4	4	4	3	3	3	3	24	Silesia, Bukowina, Mähren (German establishment).
	6	4	4	3	3	3	3	26	Mähren (Czechish establishments).
	6	3	4	3	3	3	3	25	Bohemia (German establishments).
	5	5	4	3	4	3	3	27	Bohemia (Czechish establishments).
	6	5	4	3	3	3	3	27	Trieste (German establishment).
	6	6	5	4	4	4	4	33	Galicia.
	4	3	4	3	3	3	3	23	Krain, German-Tyrol, Kaernten, Steiermark, Upper Austria, Vorarlberg.
	4	4	4	4	3	3	3	25	Trieste (Italian establishment).
	...	...	3	3	3	3	3	15	Dalmatia.
	5	4	4	3	3	3	3	25	Lower Austria, Mähren (German establisment), Silesia, Salzburg, Steiermark, Kaernten, Vorarlberg, Bukowina, Upper Austria.
French	...	4	4	3	3	3	...	17	Mähren (Czechish establishments).
	...	...	...	...	3	3	3	9	Tyrol, Trieste (Italian establishment).
	..	4	4	3	4	3	3	21	Bohemia (German establishments).
	...	...	5	4	3	3	3	18	Krain, Trieste (German establishment)
	...	...	3	3	3	3	3	15	Goerz.
	..	...	4	3	3	3	3	16	Galicia.
	...	...	5	3	4	3	3	18	Bohemia (Czechish establishment).
English	...	...	...	...	3	3	3	9	Every province outside Bohemia and Mähren (Czechish establishment), Kaernten, Tyrol, Goerz, Galicia, Dalmatia.
Italian	5	4	4	3	3	3	3	25	German-Tyrol, Vorarlburg.
	...	...	...	...	3	3	3	9	Kaernten, Krain.
	4	3	4	4	3	3	3	24	Tyrol (Rovereto).
	5	4	3	3	3	2	3	23	Dalmatia.
	3	3	3	3	3	3	3	21	Trieste (German establishment).
	4	3	3	3	3	3	3	22	Goerz.
	4	4	4	3	3	3	3	24	Trieste (Italian establishment).
History and	3	4	4	4	4	4	4	27	Galicia.
Geography	3	4	4	4	3	3	3	24	All remaining provinces.
Mathematics	3	3	3	4	5	4	5	27	Bukowina, Salzburg, Krain.
	4	3	3	4	5	5	5	29	Bohemia (German establishment).
	4	3	3	5	5	4	4	28	Galicia.
	4	4	3	4	5	5	5	30	Trieste (Italian establishment).
	3	3	3	4	5	5	5	28	All remaining provinces.
Natural History	3	3	...	...	3	2	3	14	All provinces except Bohemia and Bukowina.
	3	3	..	...	2	2	2	12	Bohemia.
	3	2	...	...	3	2	3	13	Bukowina.

[1] The age of entrance is 10 years.

Subject.	I.	II.	III.	IV.	V.	VI.	VII.	Total.	Locality.
Physics	...	...	4	2	...	4	4	14	Lower Austria.
	...	...	3	3	...	4	4	14	Steiermark, Tyrol (Rovereto), Krain.
	...	...	3	2	...	3	4	12	Galicia.
	...	.	3	3	...	3	4	13	All remaining provinces.
Chemistry	...	...	...	2	3	3	...	8	Bukowina.
	...	...	...	3	3	3	1	10	Silesia.
	...	...	...	3	2	3	...	8	Goerz.
	...	...	...	2	2	2	...	6	Galicia.
	...	...	..	3	3	3	...	9	All remaining provinces.
Geometrical Drawing	...	3	2	2	3	3	3	16	Galicia.
Descriptive Geometry	...	3	3	3	3	3	3	18	All remaining provinces.
Freehand Drawing	6	4	4	4	4	2	4	28	Lower Austria, Bohemia, Vorarlberg.
	6	4	4	4	4	3	3	28	Silesia, Salzburg, Krain, Tyrol, Steiermark, Trieste, Kaernten.
	6	4	4	4	4	3	2	27	Bukowina.
	6	4	4	4	4	2	3	27	Upper Austria.
	6	4	4	4	4	2	2	26	Mähren.
	6	4	4	3	4	3	3	27	Goerz.
	6	4	3	4	4	3	3	27	Dalmatia.
	4	4	4	3	3	3	3	24	Galicia.
Czechish	4	4	3	3	3	3	3	23	Bohemia and Mähren.
Polish	4	3	3	3	3	3	3	22	Galicia.
Croatian	4	4	3	3	3	3	3	23	Dalmatia.
Roumanian	2	2	2	2	2	2	2	14	Bukowina (optional).
Ruthenian	2	2	2	2	2	2	2	14	Bukowina (optional).
Slovenish	4	4	2	2	3	3	3	21	Krain.
	4	3	3	3	3	3	3	22	Goerz.
	2	2	2	2	...	...	...	8	South Steiermark (rel. oblig.), Kaernten(optional).
	Three divisions of two hours.							6	Trieste (German establishment, relat. oblig.).
Formal Logic	...	...	...	...	...	...	2	2	Mähren.
National Economy	...	...	...	...	...	...	1	1	Kaernten.
Gymnastics	2	2	2	2	1	1	1	11	Krain, Dalmatia.
	2	2	2	2	2	2	2	14	Lower Austria, Steiermark, Bohemia, Mähren, Silesia, Salzburg, Vorarlberg, Goerz, Galicia (optional).
	...	..	...	...	...	...	...	4	Tyrol (Rovereto), Trieste.
Caligraphy	2	2	...	...	...	...	...	4	Bohemia (Czechish establishment).
	2	1	...	...	...	...	...	3	Bohemia (German establishments).
	1	1	1	...	...	...	...	3	Tyrol (Rovereto), Trieste (Italian establishment).
	2	...	...	...	...	..	...	2	Galicia.
	1	1	...	...	...	...	...	2	All remaining provinces.

It will be seen that the different provinces do not absolutely adhere to any general plan, yet there is a great similarity on the whole in the allotment of time to the various subjects.

8. *Conditions of Entrance.*—Pupils must be ten years of age to enter the lowest class of the gymnasium. The knowledge requisite is "that measure of religious knowledge which would be acquired in the first four years of the Folkschool, readiness in reading and writing in the character special to the language, and also in the ordinary Latin characters (such as we ourselves use), knowledge of the elements of composition in the mother-tongue, readiness in analysing simply constructed sentences, acquaintance with the rules of orthography, and practice in the four operations of arithmetic with whole numbers." The examination in religion is oral, that in arithmetic and the mother-tongue, both oral and written, but pupils with good Folkschool and written examination notes (Volkschul-Frequentations Zeugnis), are exempted from the oral examination.

9. *Latin in the Gymnasium.*—The general idea in the lower Gymnasium is to develope a grammatical knowledge of Latin, and facility in translating easy Latin authors. In the upper Gymnasium, the aim is to acquaint the pupils with Roman literature in its more significant phases, and as relating to the civic life of the Roman citizens, and the cultivation of an appreciation of literary style, by this means developing elegance of speech.

The development of the lessons in the different classes is about as follows :—

Class I (8 hours per week).—Regular etymology of the language. Accurate speaking, both as regards word-emphasis and syllable-quantity. Practice in the Latin reading book; some written work; about half an hour per week. At their own homes pupils are required to memorise paradigms and words, and in the later stages of the class there are one or two home exercises in translation.

Class II (8 hours per week).—Grammar. Regular etymology, most important exceptions of the rules in declensions, genders, and conjugations. Exercises in reading, syntax, accusative with infinitive, ablative absolute. Monthly, about three compositions, ½ to ¾ hour. Home-work, memorising paradigms, rules, words. Preparation of the section to be read from the Latin reading book. One *Pensum* a month.

Class III (6 hours per week).—*Grammar* (3 hours). Theory of congruency, of the use of cases, and of the prepositions, following the school grammar. Every fortnight an hour's composition, and every three weeks a *Pensum*. *Reading* (3 hours) some lives by Cornelius Nepos, or a selection from Curtius, reading first slowly, then as progress is made, more and more rapidly.

Class IV (6 hours per week). *Grammar* (3 or 2 hours). Peculiarities in the use of nouns and pronouns. Theory of the use of tense, and mood, besides the conjugations. Composition, 1 hour a fortnight, *Pensum* once in three weeks. *Reading* (3 or 4 hours) Cæsar's De Bello Gallico (about three books). In the second half of the second semester, 2 reading hours per week are devoted to acquainting the scholars with Latin verse, hexameters, and distichs, Ovid being used. The rules of prosody are illustrated in the reading.

Class V.

Class V (5 hours per week).—Reading (5 hours) 1st. Semester, Livy. Besides the First Book, about twenty-one or twenty-two of the most important parts relating to the struggle between the Patricians and Plebeians should be read. In the Second Semester, Ovid and a selection from *Metamorphoses* and the *Fasti*. Exercises in literary style (1 hour). The development of grammatical accuracy and facility in idiomatic expression, both in respect of words and the construction of sentences. Every four weeks a composition and translation from Latin into the mother-tongue. The home-work consists of careful preparation of the school-work.

Class VI (6 hours per week).—Reading (5 hours). Prose : Sallust, *Jugurtha* or *Catiline*, Cicero's first speech against Catiline. Cæsar's Civil Wars. Poetry : Selection from Vigil's Eclogues, and some passages from the Georgics. Commencement of the Æneid. Exercises in literary style and written and home work as in the 5th Class.

Class VII (5 hours per week).—Reading (4 hours) :—Prose : Cicero, at least two orations, one of the smaller dialogues or a selection from one of the greater ones. Poetry : Continuation of the reading of the Æneid. Literary style ; written and home work as in the 5th Class.

Class VIII (5 hours per week)—Reading (4 hours)—Prose : Tacitus *Germania*, cap 1–27, and selections from either one or both of the chief works of Tacitus. Poetry : Horace, selections from the Odes, Epodes, Satires, and Epistles. Exercises in literary style and home and written work as in Class V.

10. *Greek Course in the Gymnasium.*—The general aim in the lower Gymnasium is to develope a grammatical knowledge of the Attic dialect and the most important points of syntax. In the upper Gymnasium a thorough reading of the most important parts of Greek literature is the object in view. The following outline will give a general idea :—

Class III (5 hours per week).—Regular etymology closing with verbs in $\mu\iota$ translations from the text-book. Memorising words and paradigms. At the second half of the first Semester there is one exercise every fortnight, and in the second Semester alternately a composition and a *Pensum*.

Class IV (4 hours per week).—Verbs in $\mu\iota$. The most important of the irregular inflections ; the principal points of the syntax ; translation from the book used in reading. Memorising. Every fortnight a written exercise and, alternately, a composition and a *Pensum* are required.

Class V (5 hours per week).—Reading (4 hours). 1st Semester, Xenophon's Anabasis or a selection from some chrestomathy. 2nd Semester—Homer's Iliad, selected parts, from two or three books. Explanations of the variations of the Epic from the Attic dialect. Continuation of the reading of Xenophon.

Grammar (1 hour).—Extension and consolidation of a knowledge of the Attic dialect. Memorising words and passages from the Iliad. Towards the close of the Semester, translation from the Greek into the mother tongue.

Class VI (5 hours per week).—Reading (4 hours). 1st Semester, selected parts from the Iliad in the range of 5–6 books. 2nd Semester, Herodotus ; chief points from the history of the Persian wars. Every fortnight one hour's reading from Xenophon. Grammatical and written work, as in Class V.

Class VII (4 hours per week).—Reading. In 1st Semester, three or four of the smaller State orations of Demosthenes. In the 2nd Semester selected parts of the Odyssey, covering the range of about six books, and the continuation of the reading of Demosthenes. Grammatical and written work, as in Class V.

Class VIII (5 hours per week).—In the 1st Semester, Plato, apology for Socrates, as introduction, then two or three of the smaller dialogues (Crito, Laches, Euphythro, Lysis, Charmides, or one of the most important dialogues, Protagoras (Gorgias). In the 2nd Semester a tragedy of Sophocles, and continuation of the reading of the Odyssey. The Grammatical and written work, as in Class V.

11. *German, as Mother-tongue.*—In the lower Gymnasium, the aim is to develope a good method of reading and speaking, a thorough knowledge of the structure and syntax, and accuracy in the written use of the language, a literary appreciation of the language by the learning of poetical and prose selections of enduring value, and by explaining them to the pupils. In the upper Gymnasium every effort is made to secure versatility and literary precision, both in the written and oral use of the language, extending the expressions to include a wider and wider circle of thought. An historical knowledge of the most significant contributions to the national literature, the characteristics of its principal prosaic and poetic forms, is also held to be of the highest value. *The instruction in German is by no means considered as a mere education in language*, but as providing rich material for the development of mind and character ; for this reason therefore the selection is most carefully made so as to embrace the most classical or, at least, unimpeachable forms, in this way furnishing the memory with matter, the literary and moral reactions of which will be favourable throughout.

It is unnecessary, perhaps, to refer to the work in the first three classes. In Class IV there is systematic instruction, among other things, in the elements of prosody. In Class V, beside a study of word development, of foreign words, popular etymology, etc., special regard is paid—particularly in reading—to the characteristics of the epic, lyric, and didactic forms. In Class VI the genealogy of the Germanic languages is treated, and in some of the Gymnasia Middle High German is also read. The reading includes selections from the Nibelungenlied, from Walther von der Vogelweide, etc. The history of literature from the purely historical standpoint is taken in outline.

In Class VII, Herder, Goethe, and Schiller are read, and the history of literature carried forward as far as Schiller's death. In the highest class—viz., VIII—the reading includes Goethe, Schiller, the Laokoön of Lessing, and a selection from the Hamburg Dramaturgy. The history of literature is continued as far as the death of Goethe. A sketch of the development of German literature in Austria in the 19th century is also given.

A review of the above will shew the great cultural value of the instruction in the mother-tongue. The reading, for example, of such a work as Lessing's Laokoön will in itself do much to cultivate the capacity for intelligent outlook upon the artistic side of life, and to stimulate the higher forms of æsthetic appreciation.

12. *Geography and History.*—These subjects are treated, to some extent, in co ordination. In the lower Gymnasium, the fundamental phænomena of the form and magnitude of the earth, the apparent motion of the sun, and the relation of these to the changes in climate and the amount of light, are considered. A general notion of physical geography and of the population and circumstances of various countries are given, the whole being ultimately related to the history of the Austro-Hungarian Monarchy. In History special reference is also made to the chief factors of the country's development, the material of instruction being given as far as possible in a narrative form. In the upper Gymnasium much the same holds good. The migrations of populations over the earth, the part that their concentration and development play in the history of civilisation, are considered, and the historical development of the Greeks and Romans, and of the Austro-Hungarian Monarchy receives special attention.

13. *Mathematics.*—In the lower Gymnasium, accuracy in numerical computation and thoroughness in practical application are the features of the arithmetical side, and of the geometrical, a knowledge of geometrical forms, and their most important properties and relationships (as far as possible intuitionally illustrated). In the upper Gymnasium, a thorough knowledge of elementary mathematics is conceived as the main object. As this subject is of considerable practical importance the whole is given.

Class I (3 hours per week).—The arithmetic includes the four fundamental operations in whole and decimal numbers, the theory of divisibility, etc. Preliminary exercises in fractions are also included. Intuitive geometry, the fundamental geometrical forms (straight line, angle and parallels etc.) are treated, and the simplest properties of triangles are demonstrated, in the geometrical section.

Class II (3 hours per week).—1 hour arithmetic and 1 hour geometry alternately. Fractions, ratio, the simple "rule of three," are treated in the arithmetic. Axial and central symmetry, and the congruence of triangles, the circle, quadrilateral and polygon are considered under geometry.

Class III (3 hours per week).—The four fundamental operations with whole and fractional ordinary numbers, abbreviated methods of calculations, and finding the square and square root of numbers, are the chief subjects treated under the heading of arithmetic. Equivalent surfaces, the transformation of figures, length and surface measurement, the theorem of Pythagoras and theorems of homology, are considered under the title geometry.

Class IV (3 hours per week).—Equations of the first degree, the formation of the cube and extraction of the cube root of numbers, compound proportion, calculation of interest, etc., constitute the chief work done in arithmetic. The reciprocal position of straight lines and planes, solid angles, the principal solids, the surface of solids and their volumes, are treated in the section geometry.

Class V (4 hours per week).—The four fundamental operation of arithmetic, negative and fractional numbers, properties of numbers, proportion, and equations of the first or second degree with one or several unknowns are treated under arithmetic. Geometry includes the general and scientific treatment of planimetry.

Class VI (3 hours per week).—Arithmetic includes powers, roots, and logarithms, and also equations of the second degree in one unknown. The geometry includes general stereometry and plane trigonometry.

Class VII (3 hours per week).—Arithmetic includes quadratic equations of two unknowns, diophantic equations of the first degree, continued fractions, the progressions, the calculation of interest and annuity and the theory of combinations, with application of the same. Also the binomial theorem. The geometry includes trigonometrical problems, analytical geometry of a plane, and conic sections.

Class VIII (2 hours per week).—The work in this class consists mainly of mathematical problems, and the recapitulation of the most important parts of the whole mathematical course.

This is obviously an excellent programme but is not as advanced as the similar work in the *Realschulen.*

14. *Natural History.*—The general aim in the lower Gymnasium is to make the pupil acquainted with the most important forms of the organic and inorganic world, founding this acquaintance on the immediate observation of the objects themselves, and also to accustom them to recognise similar and dissimilar forms of plants and animals. In the upper Gymnasium a systematic review is attempted of the various groups of animals and plants upon the basis of the most notable facts of their morphology, anatomy, and physiology. The forms and properties of the most important minerals and their occurrence in relation to the building up and development of the earth's surface are considered. The following will give a general idea of the work in the different classes:—

Class I (2 hours per week).—First six months, the Animal Kingdom, especially the mammalia and the insecta; the last four months, the Vegetable Kingdom, the observation and description of a number of seed-plants of various orders; intuitive instruction.

Class II (2 hours per week).—Birds, some of the reptilia, amphibia and fishes. Some mollusca and radiata; the last four months, continuation in regard to seed-plants and some spore plants; intuitive instruction.

Class III (2 hours per week).—The Mineral Kingdom. Observation and description of a moderate number of the most important and most widely distributed minerals. The usual forms of rocks. Intuitive instruction.

Class V (3 hours per week).—The first semester is devoted to systematic instruction in mineralogy, and the second semester to systematic instruction in botany.

Class VI (2 hours per week).—In zoology, the most important elements of the structure of the human being, the disposition of his various organs, special attention being paid to matters which throw light upon personal hygiene. Consideration of the classes of vertebrates and of the more important groups of the invertebrates, especially in regard to the typical forms in respect of their morphological, anatomical, and evolutionary relationships, careful attention being paid to systematic detail, and an occasional reference being made to prehistoric forms.

15. *Physics.*—In the lower Gymnasium it is endeavoured to found something like a real knowledge of the ordinary natural phænomena upon actual observation and experiment. An indication is given of the application of this knowledge to the explanation of similar phænomena and their most direct practical applications.

In the Upper Gymnasium a comprehension of the more important natural phænomena is aimed at, not solely through observation and experiment, but also by means of practical calculation, so far as the mathematical knowledge attained by the pupils will permit.

The following will give some idea of the details :—

Class III (2 hours per week).—One semester. Experimental physics, preliminary ideas, the theory of heat, fundamental ideas of chemistry, matter.

Class IV (3 hours per week).—Experimental physics. Magnetism, electricity, acoustics, optics. Phænomena in the celestial vault and astronomical geography.

Class VII (three hours per week).—Here there is a general introduction, focussing practically what knowledge was gained in the lower Gymnasium. Mechanics and the theory of heat are the main things discussed.

Class VIII (3 hours per week).—In this class, magnetism, electricity, the theory of waves, acoustics, optics, and the elements of astronomy are the subject-matter of study.

16. *Philosophical Propædeutics.*—The problem in this subject is to associate the whole content of experience of the external world by bringing under review its relationship to the inner life. This increases the depth of view of the pupils; it subsumes the facts recognised under more definite conceptions; it enables them to better understand their hypotheses and the general and philosophical significance of the facts with which they are dealing. *The importance of this is very great.*

In Class VII two hours a week are devoted to *logic*, and in Class VIII the same time to *empirical psychology.*

17. *Free-hand Drawing.*—This subject is not obligatory in all the gymnasia of Austria. Its general aim is the education of the sense of form and beauty, and to give as great a facility as possible in the representation of form. In the lower Gymnasium, readiness in the free comprehension and representation of physical objects, according to perspective principles, and dexterity in the drawing of ornaments (particularly those belonging to the classic art period), are the chief object. In the upper Gymnasium the power to make a correct representation of the human countenance, an understanding of plastic and art forms, and facility in drawing the same, are the aims of the teaching.

In the Lower Division, Classes I and II (in each of which four hours a week are devoted to the subject) the free-hand drawing of plane geometrical forms and of geometric ornaments, with special regard to the drawing of bent lines, is the chief aim. Fundamental ideas in regard to the theory of space and the explanation of elementary physical forms. Perspective: free-hand drawing with wire and wooden models; the drawing of simple ornaments in outline.

In the Middle Division, Classes III and IV (in which also four hours a week are devoted to the subject) the perspective free-hand drawing is based upon wooden models and model groups. Drawing and painting of surface ornaments of old classical art. Exercises in drawing simple physical and ornamental forms from memory. In Class IV perspective free-hand drawing, based upon the form of simple vessels, and architectural details; drawing and painting of surface ornaments from classic and other sources of art knowledge; drawing of ornamental models in plaster of Paris. In the Upper Division, Classes V–VIII, four hours a week are devoted to an explanation of the form of the human head and face, to the various exercises in drawing the head from sketches on the board, in drawing outlines of reliefs, masks, and busts; repetition and continuation of the work in the previous classes; occasional explanation of the antique orders and exercises in sketching.

18. *General Remarks on the Gymnasium Courses.*—This brief outline will give a fair idea of the course in the Austrian gymnasia. It will be recognised that it is a decidedly *liberal* course, and the practical is by no means wholly subordinated to the cultural side. This course is, of course, classical, but it contains sufficient reference to science to enable the pupil to retain at least some general idea of the significance of the subject. The whole curriculum should be compared with that of the *Oberrealschulen* to get an exact idea of the difference between the two courses.

19. *The Curriculum of the Realschulen.*—The course in *German* (as the mother tongue) calls for no special comment. It may, however, be mentioned that Shakespeare, translated into German, is read, "Julius Cæsar" or "Coriolanus" being usually preferred.

In *French* the treatment is very thorough. The course of instruction aims at conferring a thorough knowledge of French construction and of the syntax, readiness in translating into French and from French, accuracy in expressing oneself (within the circle of ideas of the pupils themselves) in French, and a knowledge of French literature from the beginning of the seventeenth century. In Class I, not only is there some reading and the construction of simple sentences, but also oral translation from and into French and conversation, or rather the answering in French of simple questions put in that language. It is, perhaps, unnecessary to add that throughout Europe lessons in French are unexceptionable as regards pronunciation and accent, and the idea of allowing the language to be taught in such a manner, that those whose mother-tongue it really is would never recognise it as their own language, is foreign to the Continental mind.

It will be sufficient to state that in this language, in *Italian*, in *English*, and indeed in every language taught in the Realschulen, not only is the grammar and the whole genius of the language better acquired than with us, the pronunciation is such that it can always be understood by citizens of the country to which the language belongs.

History and Geography are much the same as in the Gymnasium. The mathematics is, perhaps, carried somewhat further. It will, perhaps, be sufficient to indicate the latter subject as taught in Classes V–VII.

20. *Mathematics.*—The following is an outline of the treatment in the classes mentioned :—

Class V—(5 hours per week).—General arithmetic, continued fractions, diophantic equations of the first degree, theory of powers, and of the magnitudes of roots, especially the square and cube, the extraction of the second and third root of expressions of several members in the whole numbers, the theory of logarithms and their relation to the theory of powers. Briggs' system of logarithms, the formation and use of tables of logarithms, the equations of the second degree with one unknown, the geometry of the plane rigorously treated, planimetry.

Class VI (5 hours per week).—General arithmetic :—The treatment of such higher equations as can be made to depend upon quadratics, quadratic equations of two unknowns, exponential equations, exercises in the use of logarithmic tables, simplest cases of indeterminate equations of the second degree with two unknowns. Arithmetical and geometrical progressions, applications to the calculation of interest and annuities. The theory of combinations, the binomial theorem for integral positive exponents. Geometry :—Goniometry and the fundamental ideas of goniometrical functions, relations between functions of one and the same angle. The variation and definite dependence upon another given angle, the use of trigonometrical tables Exercises in goniometric equations. Plane trigonometry :—Fundamental principles for the solution of right-angled triangles and special treatment of particular cases. Application to the solution of isosceles triangles and to the regular polygons. Fundamental principles for the solution of oblique-angled triangles and their special treatment. Application in some combined cases, as well as in problems of cyclometry and practical geometry. Solid geometry :—The general principles of stereometry.

Class VII (5 hours per week).—General arithmetic :—The fundamental theory of the computation of the most probable values. Introduction to some exercises in the province of the computation of life assurance. The division of imaginary expressions into real and imaginary parts. The calculation of the modulus and argument, and the graphic representation of complex magnitudes. Geometry :—The fundamental theory of the analytical geometry of plane surfaces and spherical trigonometry ; their application to mathematical geography ; the most useful projections for land and sea charts, or some simple exercises in spherical astronomy. Recapitulation of the whole arithmetical and geometrical work in the upper classes, giving it all a practical turn by presenting suitable problems for solution.

The Austrian, and also the German teaching of mathematics, is very much more practical, and far more informative than similar teaching in English or Australian schools for pupils of the same age. A careful review of the above will convince any unbiassed reader that the mathematical education in Austria has a very high value.

21. *Physics in the Realschulen.*—The general method is, of course, experimental ; but this is supplemented by the applications of mathematics to the subject. In Class III, in which four hours per week is the time allotted, the general and particular properties of bodies are treated, and so also are heat, magnetism, electricity, galvanism, and acoustics. In Class IV (2 hours per week), mechanics, optics, and radiant heat are dealt with. In Class VI, the position and method of physics generally are treated, and the whole of the work done in the lower classes brought under systematic review. Mechanics, the wave-theory, and acoustics are also subjects of instruction. In Class VII (4 hours per week), magnetism, electricity, geometrical and physical optics, the theory of heat, and astronomy are taught.

22. *Chemistry.*—The chemistry is much more highly developed in the Realschulen than in the Classical Gymnasium. The following is a slight indication of the course :—

Class IV (3 hours per week). Preparatory section : Introduction to the most important physico-chemical phænomena and processes ; the main characteristics of the elements ; and the various products of their combinations.

Class V. (3 hours per week). Special chemistry. First part, inorganic chemistry.

Class VI (3 hours per week). Special chemistry, second part. Chemistry of the carbon compounds (organic chemistry). Theorems of general chemistry, the constitution of chemical combinations. Laboratory work is also done.

23. *Geometrical Drawing.*—That this subject is very well treated in the Realschulen, the following outline of work done in Classes III to VII will abundantly shew :—

Clase III (3 hours per week).—It ought to be mentioned that both geometry and geometrical drawing are included under the phrase "geometrical drawing." Geometry :—Figures of equal area and their transformation, calculation of areas, co-ordinated with the mathematical work done in the 3rd class. Application of fundamental algebraic operations to the solution of simple exercises in planimetry. Geometrical drawing :—The work in Class II is continued, special regard being paid to the geometry and to applications in technical practice.

Class IV (3 hours per week).—Geometry : Elements of stereometry ; position of straight lines and surfaces in regard to one another, and with reference to their application to instruction in descriptive geometry. Prism, pyramid, cylinder, cone, sphere. Determination of the magnitude of surfaces and volume-content of various bodies. Explanation and projection of the conic sections. Elementary development of their most important properties, and their application in tangent construction. Projection of points, and of straight lines in the case of the common geometrical bodies, as well as of simple technical objects (by means of two orthogonal projectional images). The basis of this work is purely intuitional, and has relation to the instruction in stereometry.

Class V (3 hours per week).—Beside the repetition of the preceding work, the pupils are introduced to elementary exercises in descriptive geometry, and the development of shadows by orthogonal projections with fixed lines and plane figures is undertaken.

Class VI (3 hours per week).—Orthogonal projection of pyramid and prisms, plane sections, etc., of these bodies. Determination of shadows. The most important elements of the projection of curved lines. Projection of the cylinder, cone, and of surfaces of rotation, the last limited to surfaces of the 2nd order. Plane sections, etc., of these surfaces. Further and more elaborate work in shadow determination.

Class VII (3 hours per week).—Construction of shadows is carried still further, the elements of linear perspective being applied to the perspective representation of geometrical bodies and of simple technical objects. The recapitulation covers all the more important parts of the course in descriptive geometry.

24. *Freehand Drawing.*—This does not call for any special comment; it is sufficient to say that it is much the same as in the previous programme, and from what the Commissioners saw the work is very thoroughly done.

25. *Discipline.*—After every monthly conference a note is sent to the parents or guardians of all pupils whose conduct or industry has been reprehensible. The disciplinary punishments in the school, in the order of their severity, are as follows :—

Reminder, sharp admonition, reprimand; these may all be intensified by being openly administered if necessary.

The severer punishments are—

(1.) Detention of scholars (in the lower classes) in the class room, and keeping them under the supervision of the teacher concerned.

(2.) Removal of a boy from his ordinary, and assigning him some special, place.

(3.) Sharp moral rebuke, with imposition of written work.

(4.) Expulsion from the school in cases where bad conduct seems irremediable, or in cases involving severe discipline because of grave moral obliquity.

Reprimands by the Director, and punishments (1), (3), and (4) must always be communicated to parents or guardians, and punishments (3) and (4) can only take place by decision of the whole teaching body. The expulsion may be limited to the school in which it takes place, or to several, or to all institutions in the same category. In the last case, however, it must have the ratification of the Ministerium.

26. *Fees.*—The fees for a semester (half year) are in Vienna 25 fl.—say, £2.; for places outside Vienna, where there are more than 25,000 inhabitants, it is 20 fl,—say, £1 12s.; and at other places 15 fl.—say, £1 4s.

27. *Examinations.*—The "Maturity" Examination consists of a written part and an oral part. In the Gymnasium an essay in the mother-tongue of about 5 hours' work; a translation from Latin, 2 hours; a translation into Latin, 3 hours; a translation from Greek (the use of a lexicon being permitted), 3 hours; mathematical work (logarithmic tables being allowed), 5 hours; an essay in a second local language, 3 hours (the latter, however, is only held at the express wish of the pupil or his parents). The oral examination covers the Latin language and literature; the Greek language and literature; the literature of the mother-tongue; history and geography; mathematics; physics (and finally in the grammar and literature of the second local language).

The written examination of the Realschulen, where the mother-tongue is German, consists of the German essay, 5 hours; translation from French (or Italian) into German, 3 hours; translation from German into French (or Italian), 3 hours; translation from English (or French) into German, 3 hours; mathematical work, 4 hours; descriptive geometry, 5 hours. The oral examination consists of geography, history, mathematics, natural history, physics, chemistry.

28. *Rights conferred by the Maturity.*—The Maturity Certificate (Maturitätszeugniss) of a Gymnasium admits to University studies, to the Technical High School (after an examination in descriptive geometry and free-hand drawing), to the school of naval architecture (after an examination in descriptive geometry), to the military academy, to the high school for agriculture, to the mining academy, to the Arbiturienten course in the commercial academy of Vienna and Graz, to the institutions for the education of teachers, and to entrance into two years' pharmaceutical practice course.

The Maturity Certificate of the Realschulen admits to the Technical High School, the school of naval architecture, the high school of agriculture, the mining academy, the arbiturienten courses in the commercial academy, and finally to the Universities studies (after passing in some further subjects).

29. *General Remarks.*—It may be mentioned that Gymnasia have been established for girls (Mädchen-Gymnasien). The "Minerva" Union in Prague founded a Bohemian "private middle school for girls" in 1890; and the "Verein für erweiterte Frauenbildung" in Vienna established a "Gymnasiale Mädchenschule" in that city in 1892. Since that time the higher education of women has made considerable progress.

There is a scheme of pensions for professors or teachers and their widows.

Every complete State secondary school must publish an Annual Report (Jahres-Bericht). This appears at the close of each school year, under the name of the Director, who is responsible for it. It must consist of two parts, viz., a scientific or pædagogic division, and a division for school news. An exception to this rule is sanctioned by the Ministerium only when unusual circumstances call for it. In regard to the scientific, literary, and pædagogic division, the following examples, taken at random, will illustrate the kind of matter. The Jahres-Bericht of the Imperial Royal Maximilian Gymnasium of Vienna for 1902, opens with an article by F. E. Hirsch, a Professor in Latin and German at the Gymnasium, on Dorothea Schlegel's "Florentin." This has no less than twenty-nine pages—say about 14,000 or 15,000 words. In the Jahres Bericht of the Staats-Realschule in Vienna, there is a contribution of thirty-three pages on Goethe's "Götz von Berlichingen" by Professor Jaro Pawel, the German master. Again, in the annual report of Count Straka's Academy and its private Gymnasium in Prague (Výroční zpráva akademie hraběte Straky a jejího soukromého

soukromého gymnasia v Praze) for 1902, there is a complete account of its development during its first three years, 1896–99 (Akademie hr. Straky v prvním tříletí 1896–1899). This will give some idea of the kind of matter that is incorporated in the annual reports. It should, perhaps, be further stated that one will find literary discussions, textual criticisms, researches in the field of pure and applied mathematics, and in science generally, therein, and that the reputation of the different gymnasia and Realschulen is influenced by the calibre of the articles so appearing. In the higher technical institutions, one often finds a record of the original researches or contributions of each member of the teaching staff. It would be practically impossible, not only in Austria, but also in the other countries of Europe, for anyone to attain to a high station in the educational world without having made important original contributions to human knowledge or to some special department of pædagogy.

30. *Conclusion.*—The secondary educational system of Austria is undoubtedly a very good one, notwithstanding that the educational authorities of that country recognise room for improvement. The direction of the improvements need not, however, be here discussed. The Gymnasia and Realschulen seen by the Commissioners in Prague and Vienna, were a revelation as to what the Czech and Austrian are prepared to do in order to thoroughly educate their people. The Academy of Count Straka in Prague was particularly well equipped.[1] It is worthy of note in regard to this particular academy that complete statistical records are kept of the height, chest measurement, circumference of the head, and the weight of each pupil, the record being taken once a year. Complete information is also kept as to the condition of the sight of each of the pupils, any illness he may have, and the medical treatment he may receive.

The thorough qualification of the professorial staff in the Gymnasia and Realschools of Austria and Bohemia and the completeness of their scientific equipments gives to Austrian secondary education its high value. Its teachers know their subjects, and they know how to teach. The apparatus to be found in the schools for the teaching of each branch of science[2] gives them their proper opportunity. Therein lies the secret of their success.

CHAPTER X.

The Organisation of Secondary Education in Hungary.

[G. H. KNIBBS.]

1. *Introduction.*—In Chapter XVI of the Interim Report, there is an incidental testimony as to the great excellence, from one point of view, of Hungarian secondary education. This testimony is the more valuable, as it is from an impartial Hungarian, who had spent a considerable number of years in the better educational institutions of England, and who had obviously a strong bias in favour of our country and the character of our people; so much so indeed that he would be accredited rather with English prejudices than with prejudices against England and in favour of his own country. Contrasting Oxford and Cambridge men, whom he evidently prefers, and basing his comparison upon a knowledge of a great number, he implies that, compared with Hungarians of the same age, they are relatively uneducated (page 159).

The testimony of an educationist of considerable experience, who deliberately prefers the educationally inferior English system to the better Hungarian, has at least the merit of not being biassed unduly in favour of the latter. The Hungarian system, therefore, which produces such excellent results from one point of view is worthy of inclusion in the study of secondary educational systems.

2. *Early History and Development.*—The educational system which obtains to-day in Hungary had its origin when Christianity was introduced—say, about 1000 A.D. The culture of the liberal arts flourished as early as 1276 at Veszprém, the University at "Pécs" being organised about a century later, namely, in 1367, and that of Buda in 1390. The *trivium* (grammar, rhetoric, and dialectic) constituted general culture, and the *quadrivium* (arithmetic, geometry, music, and astronomy) special culture. There were several classes of schools, such as the Cathedral or Episcopal, as at Veszprém, the capitular schools as at Székes Fehérvár and Györ, and monastic schools, as at Pannonhalma, the last being almost invariably Cistercian. The Renaissance and Reformation led to changes in the secondary and higher teaching, the rivalry between the Reform and Catholic schools contributing not a little to the general development of education. Public instruction for the two centuries ending in 1773, namely, the year of the suppression of the Jesuit order, was in the hands of that order, it having no less than forty-one gymnasia and a large number of boarding schools. The Jesuit scheme of education is said to have been instinct with cosmopolitism, and apparently there was very little difference between education in Hungary and that in France or Germany. The "*Ratio studiorum*" was the guide; the general methods differed little in each country, and the success of the teaching attracted general sympathy. At

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[1]The Commissioners are under special obligations to Hofrath Professor Dr. Otto Willmann for his kindness to the Commissioners in Prague, for information supplied in regard to the University Pædagogical Seminarium of that city for the best sources of information as to the Czech language, and also for the extreme courtesy of his general assistance to the Commissioners.

[2]One can easily realise, on seeing an Austrian school, why the "Lehrmittelsanstalten" are such extensive establishments.

At the end of the sixteenth and the beginning of the seventeenth centuries, the Reform schools were considerably multiplied, the Lutherans having parent institutions at Eperjes, Pozsony, and Soprón, while the Calvinists had institutions at Debreczin and Patak. These great schools developed smaller ones, known as *Scholae particulares*, whose teaching-staff was recruited from the pupils of the former. A great number of Protestant schools were closed in 1681.

Passing over the various phases of thought which modified education and the "*Ratio educationis*" of Maria Theresa,[1] we come to the second "*Ratio educationis*," namely, that of 1806, which more fundamentally affects the present characteristics of Hungarian education. Under this code, secondary education was divided into three sections. The first was known as the grammar-course, to enter which it was necessary to attend the primary school for two years.

The main object in this was to give the pupils a knowledge of Latin, at that time practically a living language. The second section consisted of two classes called the "Humanities," where the elements of geography, history, and arithmetic were taught, and, above all, rhetoric and Latin poetry, and also style. The third section was known as the course of philosophy, and was similarly a two-year course. Philosophy, mathematics, physics, and history were included in this last. There were, however, but few colleges which maintained a course of philosophy. This division is practically much the same as the *trivium*.

It will be seen hereinafter that the organisation of the French Lyceum is to-day much after the above model[2].

By the law of 1883 there was a general reform of the whole scheme of secondary education. The grammar division was replaced by the lower gymnasium, while the humanities and the philosophy course became the upper gymnasium, which closed with the certificate of "maturity[3]."

The Real school appeared also, in its turn. Up to 1875 it had but six classes, which increased in that year to eight, when it was first ranked as a secondary school.

The secondary schools of Hungary are to-day either gymnasia, or real schools, the former being the classic schools and the latter teaching modern languages, mathematics, and the natural and physical sciences. *They are of the same grade, and are co-ordinated.* By the law of 1890, students were allowed to *abandon the study of Greek* if they so desired, provided they followed a course known as the "compensation course." This required a fuller knowledge of the literature of the mother-tongue (Hungarian), the reading of Greek literature in Hungarian translation and the practice of drawing. In 1897–8 the pupils of the four higher classes in the gymnasia numbered 14,659, of which 10,041 learnt Greek, and 4,618 elected the compensation course. There are, therefore, now three types, viz. :—

(i) Latin—Greek ; (ii) Latin ; (iii) No classic language.

At the end of the scholastic year (1897–8), the relative number of students who passed the *maturité* examination was

(i) 2,101 ; (ii), 1,024 ; (iii), 361.

The ratio being approximately 6 :3 :1. Pupils who take Latin only may receive the special privileges of the Latin-Greek section by passing a complementary examination in Greek, and similarly those who take the third division must pass a complementary examination in both Latin and Greek, and so on.

Both classes of schools have eight classes covering eight years. They admit pupils who have passed through the four classes of any primary school whatsoever, and who consequently can "read, write, and cypher."[4] In the absence of the certificate of the primary school an admittance examination is held, and in the secondary schools advancement depends upon passing the examination in each class at the end of the year. The *baccalauréat* of France does not exist in Hungary, but the *maturité* admits to the various faculties of the University, etc.

There were in Hungary in 1898—

	109 complete gymnasia ;		53 incomplete.
	25 complete "real schools" ;		7 incomplete.
Total ...	134	Total ...	60

That is to say 194 secondary schools, for a population of, say, 17½ millions of people.

Women are admitted to the University for the courses in teaching, medicine, and pharmacy, through the recent reform movement (1895)[5], and there are now secondary schools for young women.

3. *Organisation of Hungarian Secondary Education.*—There are three groups of schools in Hungary, viz.:—

Group I. Gymnasia and Real schools supported by the State, or from the school funds available through the suppression of the Society of Jesus. The power of the government is absolute in regard to those schools.

Group II. Secondary schools which are supported by the towns, the communes, by societies, by private individuals, by Roman or Greek catholics, by prelates, or by religious orders.

Group III. Secondary denominational schools, or "*confessional*" schools, as they are called. (Among these are Lutheran, Unitarians, a school of the Orthodox Roumanian Church, one of the Orthodox Servian Church, etc.).

All are equally subject to the decrees of the Government in all that concerns pædagogy and didactics, but within these limits groups II and III are autonomous. They appoint their own teachers, inspectors, directors, counsels of administration, etc., but are subject to the supervision of a delegate from the Ministerium, who reports on the teaching, discipline, buildings, students, etc.. But so long as the law is complied with however, and the institutions are satisfactory, they are perfectly free. Hungary

[1] "Ratio Educationis totiusque Rei Literariae per Regnum Hungariae et Provincias eidem adnexas," 1777. 8vo, pp. 496.

[2] The grammar course corresponds to the "*Division de grammaire*" of the lycée, the humanity classes correspond to the 3rd, 2nd, and rhetoric classes of the "*Division supérieure*;" the philosophy course is the philosophy class, reduced, however, to one year in the lycées.

[3] Immatriculation for the University.

[4] Education in Hungary is obligatory from six to fifteen years of age, hence the age of entry into the gymnasium may be set down as ten.

[5] M. Jules Wlassics, who helped this reform, was the Minister in Ministerium für Kultus und Unterricht.

Hungary is divided for the purpose of school administration into twelve districts (like the French Academies. See Chapter hereinafter), each being under the charge of a higher director, responsible for the affairs of secondary schools only. (This differs from the French régime, where the rector has charge of all branches of education.) The Academies or Districts are:—(1) Budapest, city; (2) Budapest, environs; (3) Pozsony; (4) Györ; (5) Beszterezebánya; (6) Kassa; (7) Debreczen; (8) Nagyvárad; (9) Kolozsvár; (10) Nagyszeben; (11) Szeged; and (12) Székesfehérvár. The Higher Directors preside at the final examinations (maturité), they visit the secondary schools once a month, and also visit the confessional schools of the third group, but only as the delegate of the Minister. They do *not*, however, preside at the examination of the autonomous schools, the Minister being usually represented by a regular faculty professor.

4. *The Unity of Secondary Education in Hungary.*—Notwithstanding the racial and religious difficulty of bringing all the educational forces into unity of effort, this feature has received a very great deal of attention in Hungary. By the law XXX of 1883, certain safeguards are created, viz.:—

1°. The State determines the aim, extent and minimum of education. Thus although the autonomous schools are not forced to exactly follow the programmes of the State secondary schools, they are compelled to maintain an education in no way inferior to that of the "public" schools.
2°. The Hungarian language and literature is obligatory in all secondary schools irrespective of nationality, this means that every citizen, whatever his nationality, who wishes to occupy any public function whatsoever, must have a thorough knowledge of the language and literature of Hungary.
3°. In order to be a teacher or professor in any secondary school of Hungary, it is necessary to be recognised and admitted by the State, that is to say, the religious bodies are not permitted to award the diploma of teacher or professor, such diploma may be awarded by the State alone.

The unity so attempted to be secured, has been consolidated by the law XXVII of 1894. This establishes a complete reciprocity in regard to the passage of teachers from a "confessional" to a state school and *vice versa*, the official service in either being fully recognised in all questions of retirement, pension, etc.

5. *Publicity in Secondary Schools.*—In Hungary the right of delivering school certificates recognised as valid, is strictly confined to schools officially recognised by the State as "public scholastic establisments." The pupils of private secondary schools must submit themselves for examination in public establishments recognised as such and as having the right to award certificates. (Austria and Germany have a similar organisation, but France has one which is somewhat different.)

The certificates recognised throughout the country and in all circumstances as valid, may be issued by secondary schools legally recognised as fulfilling the following conditions, viz.:—

1°. The endowment of the school must be absolutely guaranteed.
2°. The classes must conform to the general technical conditions, and be satisfactory as regards pædagogy and hygiene.
3°. The programme of studies must conform substantially to the State prescribed conditions.
4°. The number of teachers and their qualifications must accord at least with the minimum conditions exacted by the law.

There is now but a single establishment in Hungary which is *private*, in the sense of not having the right to award certificates, and it is found from experience that such *private* schools have no chance of success.

The State has not only the right to confer the authority to issue scholastic certificates, it has also the right to withdraw the authority. If a school fall below the proper standard, and after three warnings still remains imperfect, its authority of certificate issue is cancelled.

6. *Subsidy of Hungarian Secondary Schools.*—Secondary schools in Hungary have the right of subsidy when they stand in urgent need thereof. The Communal (municipal) schools, the "confessional" (denominational) schools, and endowed schools, all receive subsidy by special vote of Parliament. The subsidy is always granted under a convention concluded between the State and the school, the degree of autonomy being reduced in proportion as the subsidy increases. For example, *every secondary school in receipt of subsidy must adopt the State programme, and cede to the Minister of Public Instruction the right to appoint certain of the teachers or professors in the establishment*[1]. In 1897 the Government paid about £32,800 by way of subsidy. The subsidy to a single college rarely exceeds £1,300 or £1,400 per annum.

Although the greater number of the secondary schools are maintained by the various religious bodies, the State has never hesitated to interpose its authority or to push it as far as was deemed necessary, even as regards the innermost facts of the interior life of the schools, the programme of study, the language, the appointments of teachers, the unification of the system of appointment and pension, the right of publicity.

The whole course of secondary education in Hungary from 1883 onward is said to have witnessed a growing development of the national spirit, and a real approach to unity in teaching and education, from the administrative point of view.

The experience of Hungary is valuable as affording some indication of a practical method of bringing educational institutions under the State régime, without in any way increasing, but rather diminishing, ecclesiastical control. The question of unification has been discussed in Chapter LV of the Interim Report, pages 475–480.

7. *Programme of Studies of the Gymnasia in* 1898—*General Remarks.*—The subject-matter of teaching comprised in the programme of studies of the Hungarian gymnasia is very similar to that in the programmes of secondary teaching in equivalent institutions in France, Germany, Italy, and, in fact, of the civilised world. The principal subjects of teaching are:—The Hungarian language and literature (30 hours per week), the classic languages (68 hours per week), and mathematics (25 hours per week). These are

[1] It need hardly be stated that it is not in the power of Ministers to appoint any but duly-qualified persons.

are the fundamental studies on which that general intellectual culture which the gymnasia seek to attain, is founded. The other subject-matters, including history, are relegated to the second plane. There is, each week, in the eight classes of the gymnasium, 18 hours of history, 10 of geography, 10 of geometry, 8 of natural science, and 8 of physics. In fact, German is the only modern language taught (18 hours per week), in view especially of the literary acquirements. Propædeutic philosophy (3 hours per week), taught in the eighth class only, is never a subject-matter of independent teaching ; its aim is rather the recapitulation and classification of the general principles of the other subjects.

8. *Religious Instruction.*—Two hours religious instruction per week in each of the eight classes is obligatory in Hungary, and the question is not left to the discretion of the parents. In Hungary, even "free thinkers" must have their children, at least up to the age of 18, taught the principles of whatever "confession" is deemed expedient for them. Consequently, the directions to the secondary schools of Hungary take care that all the pupils, whatever their confession may be, participate in religious instruction. There are attached to each secondary school, therefore, professors of religion (Roman Catholic, Greek Catholic, Lutheran, Reform, Unitarian, Orthodox Greek, and Jewish) according to the need of the school.

9. *Hungarian Language and Literature.*—The thorough study of the mother-tongue is one of the principal features of the studies in the gymnasia. The three first years are devoted mainly to grammar, the four years following (IV–VII) are devoted to a more thorough reading and to the æsthetical appreciation of the language (IV, style ; V, composition ; VI, rhetoric ; VII, poetry), whilst the last year (VIII) is applied to a general study of the literature. In the grammatical and literary studies of other languages the procedure is similar to that followed in the teaching of Hungarian. The Greek and Latin classics, as well as the German readings, are selected and treated in such a way as to prepare and to facilitate the theoretical explanations of the professor or teacher of Hungarian. Thus, for example, when the teacher of history recounts to his pupils the history of chivalry, the German teacher makes them at the same time read "The Cid" of Herder, in such a way as to excite historic interest. This, and the reading of the works of Tibullus and Catullus, similarly treated in the fifth class, will be of value to the teacher of poetry in the seventh class, when he comes to discourse on this kind of poetry. This treatment appears to have commended itself not only to the Hungarian people themselves, but also to foreigners.

The Hungarian language is so treated as to bring into relief the historic development of the nation's intellectual life. To this end selections from the treasures of Hungarian literature have been made which reflect the national culture of the principal epochs of their history. Thus, pupils of the first class learn the popular stories, historical legends, of the life of the people, and to these are added selections from Greek mythology. In the second class they enter upon stories and legends having relation to the foundation of the Hungarian State and the adoption of Christianity. Collaterally with this they read legends relating to the development of ancient Greece, and to its primitive legislation. In the third class, the pupils are familiarised with the history of the invasion of the Tartars (thirteenth century).

The children of the fourth year make an analysis of one of the popular epopees, for example, of the "*Toldi*" of Arany Janos[1] which relates to the Anjou period. To this are added descriptions in prose, narratives, sketches, and biographies (Plutarch). In the fifth class the appreciation of the different kinds of lyric poetry is intensified, romances, ballads, songs, etc., being read and discussed, the ballads and lyric poems of Arany referring to the period of the Hunyadis (fifteenth century). Readings in prose (Memoirs of Xenophon), letters, short treatises, and other similar pross works serve to elucidate more thoroughly the rules of composition. In the sixth class the pupils pass to the reading of the drama (Shakspeare, Molière), and the master-pieces of eloquence (*e.g.*, speeches of Déak Ferencz[2]). The seventh and eighth years are devoted mainly to the study of the theory of æsthetics.

These selections from the literature of Hungary embrace the finest creations of the national genius in those successive centuries in which was revealed the essential character of the Magyar race.

The works of Arany and Petöfi[3] are regarded as of the first rank in importance, since it is in these that the ideal world of the Hungarian soul is most faithfully depicted. They are the two national poets, *par excellence.* The "*Toldi*" of Arany Janos is read in every secondary school of Hungary ; it is committed to memory, declaimed, and every Hungarian will wax enthusiastic over it as a Greek might over Homer.

One will not understand the Hungarian, unless he remembers that the image of the hero of Arany's great poem lives in the soul of every Hungarian youth of any fibre. The strength of body and spirit, the noble simplicity of soul of this brave knight of the golden age of Hungary, is an idealised image immortalised by Arany. It is an image which awakens in the youth an ardent love of his country ; which teaches him to appreciate and cherish his race ; it is an image which makes him proud of its past glory.

Intense patriotism is an Hungarian characteristic, and his ideals are aroused both by religious instruction, and by the study of history and literature.

10. *Latin and Greek.*—The teaching of Latin is characterised by the care exercised in making the selections for reading. This aims at making the pupils acquainted with the whole history of the Romans. In the first year, the history of ancient Rome is learnt ; in the second, the kings ; in the third and fourth years, the early days of the Republic (Coriolanus, etc.), all being dealt with by means of appropriate selections. In the fifth year, the Punic Wars in Titus-Livius are read. In the sixth and seventh, the facts of the centuries which followed the Republic are learnt by reading Sallust and Cicero. Finally, in the eighth year, the reading of the works of Tacitus initiate them into the history of the Empire. The poetry in the selected passages serves to tincture and to complete the ensemble. In the eighth year, along with Tacitus, Horace is read. The

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[1] Arany Janos, *i.e.*, John Arany, is esteemed the most variously gifted of the Hungarian lyrical poets. The Toldi trilogy consists of three parts :—I, *Toldi*, published at Pest in 1847 describes the early life of the hero ; II, *Toldi Szerelme* (the Love of Toldi) was not published till 1879 ; III, *Toldi Estéje* (Toldi's Eve ; *i.e.*, his fall and death) was published in 1854.

[2] Déak Ferencz, *i.e.*, Francis Déak, an Hungarian statesman (1803–1876), said to be the most distinguished that that country has ever produced, was in youth an orator of passionate and florid style, and in later life deliberate, lucid, and convincing.

[3] Alexander Petöfi is to the Hungarian what Robert Burns is to the Scotch. His lyrics have been translated by Sir John Bowring.

The programme does not admit of the reading of pieces without connection. The plan of studies is expressed in the following terms in relation to the aim of the Latin instruction, viz. :—

(*a*) The pupils shall have a thorough knowledge of the Latin grammar, and shall be able to understand and correctly translate the selected classics, as well as to express in good Latin any passage given them.

(*b*) They shall be conversant with the life and ideal world of the classic peoples, so that they may adequately profit by the authors whose works they read.

They are careful to neglect nothing which has reference to their encyclopædias of the Greek and Roman antiquities.

In order to facilitate the work of the students, recent commentators add to their editions of the classics, tabulated statements of the antiquities; but no recourse is had to special studies of Roman literature or archæology.

In the study of Latin, the theory of grammatical forms is less relied on than syntactic analysis, and verbatim translation is approved, the official view expressly deploring that there should be still professors who prefer style to literalism in translation.[1]

Latin composition is not exacted in Hungarian schools.

Greek is taught only in the four higher classes. The number of hours devoted to it, viz., 19 hours per week in the four classes, do not suffice to stamp the spirit of the language indelibly in the mind of those who pass through these secondary studies. Some songs from the Iliad or the Odyssey, some books of Xenophon, one of the lesser works of Plato, usually the Apology or Crito, and sometimes a scene or two from one of the dramas of Sophocles, is about as far as the teaching of Greek extends in Hungarian gymnasia.

The pronunciation of Erasmus is that which is generally adopted.

At the completion of the course, the grammar should be thoroughly understood, and also the authors in the syllabus. Notwithstanding the limited number of hours devoted thereto, the result of the teaching of this language is not without success. This, however, is but natural, since only the abler pupils continue the studies in Greek.

11. *German.*—The study of German is obligatory for all pupils. The freedom of choice that obtains in France of learning any foreign language whatsoever, as German, English, Italian, or Spanish, is not a feature of Hungarian schools. The object of the study is to enable the pupils to understand the classical works of the German literature, and to translate Hungarian into German; and the reading for the higher classes is usually taken from the classical authors. As in the programmes of the Secondary Schools of France, dealt with hereinafter, the teaching of modern languages has ever in view the cultivation of the sense of the æsthetic.

In brief, the programme of study of German is as follows :—

Class III, 4 hours.—Selections for reading, serving as a point of departure for teaching the structure and syntax of the language; phrases, to be learnt by heart; oral translation from Hungarian into German; short pieces in prose and verse, to be learnt by heart; exercises in class once a fortnight.

Class IV, 3 hours.—Continuation of grammar, systematic recapitulation; etymological groups of words, to be learnt by heart; oral translation from Hungarian into German; small prose pieces and poems to be committed to memory; once a fortnight, class exercises.

Classes V, VI, VII, 3 hours in each; *Class VIII*, 2 hours.—Continuation of grammar; selections in prose and verse, apropos of the instruction in Hungarian. A monthly exercise of reproduction in German of some reading, or a translation of Hungarian into German.

The following are the poetical authors used in the four higher classes :—The *Cid* of Herder; the ballads of Bürger, Goethe, Schiller, and Uhland; *Hermann und Dorothea*, Goethe; Wilhelm Tell, Schiller; *Minna von Barnhelm*, by Lessing; *Iphigenie auf Tauris*, or *Egmont*, Goethe; *Wallenstein's Tod*, Schiller.

12. *History.*—The teaching of history in Hungary is based on quite other principles than those governing the teaching of the subject in Germany and France. Omitting altogether the element of ancient history, and confining our attention to modern, it may be said that, in the case both of France and Germany, the history of the mother country serves as a centre, in relation to which the different phases of development of other states are to be portrayed. This method is deemed scarcely possible in Hungary, for, although at certain epochs of history, the Hungarian nation played a decisive *rôle* in politics, it believes that, on account of the isolation of its race and language, the paucity of its population, and its geographical position, it is better that in the Gymnasia (in Classes IV to VII) universal history, properly so-called should be taught, taking account, however of contemporary national events. The history of Hungary itself, is taught separately. In the 3rd class there is an elementary course, of a propædeutic character. In the 8th there is a higher course, which is essentially pragmatic.

13. *Geography.*—In the 1st and 2nd classes geography is purely practical. Physical geography is introduced in the 3rd class, and political geography is not taken till the 7th class; that is after the completion of modern history.

14. *Mathematical, Natural, and Physical Science, etc.*—Until recently, elementary courses in botany, geology, and zoology were not given in the Hungarian gymnasia. Systematic natural history is taught in classes IV, V, and VI. The following is the distribution of teaching in natural and physical science, viz. :—Geography, I, II; physical geography, III; mineralogy and chemistry, IV; botany, V; zoology, VI; physics, VII, VIII. Hygiene is taught, but is not obligatory. The lessons are given by professors in schools of medicine.

In mathematics, algebra is carried as far as the binomial theorem; geometry includes trigonometry and the elements of stereometry. Descriptive geometry is taught in classes VII and VIII, *to those who abandon Greek.* 15.

[1] This view is not shared by the Commissioner here writing. See Chapter XXII of the Interim Report, on "The Teaching of Ancient and Modern Languages," pp. 197—211. See in particular sec. 9, pp. 200—201.

15. *Free-hand Drawing.*—This subject is taken in conjunction with geometry and in the drawing of ornamental designs; the elements of planimetry and geometry are put to practical use.

16. *Philosophy.*—To this subject three hours a week are devoted in the last year only, and its aim is to co ordinate the knowledge acquired throughout the school career, or rather to subsume it under general principles.

The course touches such matters as :—

(i) Difference between the physical and moral life.
(ii) Principal divisions of the soul's functions.
(iii) Intellectual development.
(iv) The elements of logic.
(v) Classification of the sciences—principal methods.

17. *Curricula of Gymnasia and Real Schools.*—The programmes of the Gymnasia and Real Schools are as follows :—

[1] *Programme of Hungarian Gymnasium.*

Subject.	Classes—Hours per Week.								
	I	II	III	IV	V	VI	VII	VIII	Total.
*Religion	2	2	2	2	2	2	2	2	16
Hungarian	6	5	3	4	3	3	3	3	30
Latin	7	7	6	6	6	6	6	5	49
Greek, or alternative course	...	...	...	...	5 (4)	5 (4)	5 (4)	4	19 (16)
German	...	...	4	3	3	3	3	2	18
History	...	...	4	3	3	3	2	3	18
Geography	4	4	2	...	...	...	...	...	10
Natural History	...	...	...	3	2	3	...	...	8
Physics	...	...	...	...	...	...	4	4	8
Mathematics	3	4	3	3	4	3	3	2	25
Geometrical Drawing and Free-hand..	3	3	2	2	...	...	...	...	10
*Philosophy	...	...	...	...	...	...	...	3	3
*Caligraphy	1	1	...	...	...	...	...	...	2
*Gymnastics	2	2	2	2	2	2	2	2	16
Total hours per week	28	28	28	28	30	30	30	30	232

The entrance into the Gymnasium is at about 10 years, so also into the Real School, hence, if we add ten to the class number, that will represent the age of the pupil.

Programme of Hungarian Real Schools.[2]

Subjects.	Classes—Hours per week.								
	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	Total.
*Religion	2	2	2	2	2	2	2	2	16
Hungarian	5	5	3	3	3	3	3	3	28
German	5	4	3	3	3	2	2	2	24
French	...	...	5	5	4	4	3	3	24
*Philosophy	...	...	...	...	...	...	...	3	3
Geography	3	3	...	3	...	...	...	...	9
History...	...	...	3	...	3	3	3	3	15
Mathematics	3	4	3	4	5	4	4	3	30
Natural History	2	2	...	...	2	3	3	...	12
Physics...	...	...	3	...	...	...	4	5	12
Chemistry	...	...	...	2	2	3	...	...	7
Geometry	5	5	2	2	2	2	2	2	22
Drawing	...	...	2	2	2	2	2	2	12
*Caligraphy	1	1	...	...	...	...	...	...	2
*Gymnastics	2	2	2	2	2	2	2	2	16
Total hours per week	28	28	28	28	30	30	30	30	232

It will be observed that excepting the subjects marked * there is no identity either in the lower (Classes I–IV) or higher (Classes V–VIII) divisions of the Real Schools and Gymnasia.

The Real Schools are much the same as the recent Oberrealschulen of Prussia, or to the modern division in the Secondary Schools of France, both of which will be hereafter referred to. The

[1] Fögymnasium. [2] Föreáliskola.

The characteristic differences between the Gymnasium and "Real" School are—

(i) Ancient languages are not taught in the "Real" School but are in the Gymnasium.
(ii) German though taught in both is more thoroughly taught in the "Real" School, and French is taught in the latter alone, *i.e.*, as a compulsory subject.
(iii) Science though taught in both is much more thoroughly taught in the "Real" School.

The result can be better seen in the form of a Table: Subjects such as religion, gymnastics, writing, philosophy, which are identical, may be left out of consideration. The classes may be grouped under the lower and upper divisions, viz., 10–14 years, Classes I–IV, and 15–18 years, Classes V to VIII. It may here be remarked that many pupils do not go on to the upper division.

Comparison between the Courses in the Gymnasium and the "Real" School, Hungary.

Subjects.	Lower Division.		Upper Division.	
	Real.	Gymnasium.	Real.	Gymnasium.
Greek } Ancient	0	0	0	19
Latin } Ancient	0	26	0	23
Hungarian }	16	18	12	12
German } Modern	15	7	9	11
French }	10	0	14	0
Geography	9	10	0	0
Mathematics	14	13	16	12
Geometry (and Drawing)	14	10	8	0
Physics	3	0	9	8
Chemistry	2	0	5	0
Natural History	4	3	8	5
Drawing	4	0	8	0

The figures represent the total hours per week in the four classes.
The detailed treatment does not call for special reference.

18. *Optional Subjects.*—The optional subjects are singing, stenography,[1] and hygiene in both the Real Schools and the Gymnasia; French is optional in the Gymnasia, and Latin and book-keeping in the Real Schools. French commences in Class III (Gymnasium); and Latin, introduced in 1887, as an optional subject, and now taught as such in all the Real Schools, in Class V, the hours in the successive classes in the latter case being 4, 3, 3, 3; total, 13.

English, music, Sloyd, modelling, and laboratory practice also find a place.

It should be here mentioned that there are superior primary schools in Hungary specially designed for the ordinary citizen, in fact they are sometimes known as "bourgeois" schools. These have been mentioned in the Interim Report, Chapter VI, section 42, page 77, where the programme will be found. They are the better class of ordinary primary school.

19. *Educative School Excursions.*—The Hungarian railways have a zone-tariff, and since its introduction a considerable number of educative school excursions have been made. The teachers of geography, of history, of natural history, visit places of importance in some particular relation; the teachers of chemistry visit workshops, manufactories, etc.; and the more well-to-do pupils even travel into foreign countries, for example, visits are often made to Venice, Florence, Rome, Naples, or even farther afield. Several of the Secondary Schools have started an excursion fund for this purpose.

20. *Literary Clubs.*—A feature of many Secondary Schools in Hungary is the associated literary clubs, generally presided over by the professor of the mother tongue, at which the literature of Hungary receives special attention. By means of declamations, readings, literary essays, and translations, the mother-tongue is highly cultivated, and *educated Hungarians have a masterful knowledge of their own language.* Some of these literary clubs, especially in the Protestant schools, are old, dating back to the beginning of last century, and the national aspiration which the events of 1860-1 so powerfully affected, led to the general development of literary clubs in connection with the Secondary Schools.[2] Since great importance is attached to excellence in Hungarian in the examinations, these clubs are a really important educational factor.

21. *Final Examinations.*—The examination at the close of the Real School and Gymnasium is, like the *Maturité*, the *Absolutorium*, or the *Arbiturienten Examen*, the matriculating examination for higher education. It qualifies for entrance to the Polytechnicum or University. There are three degrees in the pass, viz.:—1, Excellent (jeles); 2, good(jó); 3, sufficient (elégséges); and those who fail are known as insufficient (elégtelen). The examination is in part written and in part *viva voce.* Great attention is paid to the perfection of the composition in Hungarian. The written examination covers the following subjects, viz.:—

I. *Gymnasium.*—(*a*) Hungarian composition; (*b*) German translation; (*c*) a thesis in Latin; (*d*) Greek translation; (*e*) mathematical problems.
II. *Real School.*—(*a*) German or French composition; (*b*) Mathematical problems. Five hours are given to each subject, and the examination is with closed doors, and under surveillance.

In

[1] The system of Gabelsberger-Markovics.
[2] Magyar was recognised as the official language in 1860, and in 1861 it was decreed that the former Constitution should be restored to Hungary.

In the *viva voce*, 45 or 50 minutes are devoted to each pupil, the interrogation being by the Professors, but the President and Ministerial Commissary have also the right to put questions. The interrogatories cover the following subjects, viz.:—

I. *Gymnasium.*—(*a*) Hungarian language and literature; (*b*) Latin language and literature; (*c*) Hungarian History; (*d*) Mathematics—viz., Algebra and Geometry; (*e*) Physics.

II. *Real School.*—(*a*) Hungarian language and literature; (*b*) German language and literature; (*c*) Hungarian History; (*d*) Mathematics—viz., Algebra and Geometry; (*e*) Physics.

Where the mother-tongue is not Hungarian, there is also an examination therein; over 80 per cent. pass the examinations.

22. *The Teaching Staff.*—The teachers of secondary schools in Hungary must be well-educated men, and receive their higher tuition either in the Universities of Budapest or Kolozsvár, or at the Polytechnicum at Budapest. They must, having got the maturité, inscribe their names at these institutions for four years in the courses which they propose to follow professionally. But since higher education in Hungary has the same feature of student freedom, as in Germany, etc. (Studentenfreiheit)—*i.e.*, the student is unrestricted as regards lectures, etc.—*normal schools for secondary education have been created as adjuncts to the Universities of Budapest and Kolozsvár.* In addition to this there are *seminaries*, developed on the lines of those in Germany and also the Eötvös College, at Budapest, the scheme of which was projected by the Minister L. Eötvös, and actually put into execution by J. Wlassics, the Minister for Public Instruction. This last is modelled after the "Ecole normale supérieure" of Paris.

There is a practising gymnasium annexed to the normal school of Budapest, organised according to the pædagogical system of Stoy and Ziller. The classes are limited to thirty pupils. The candidates follow courses in pædagogy and methodology; they assist them first as auditors, and, later, as assistant teachers. Every lesson is most carefully prepared, and is given under the superintendence of the teacher or professor.

The scheme generally is similar to that for the training of primary teachers, and is approved by educationists of eminence.

The examination boards consist of University and other professors and the teachers of secondary schools; and these, of which there are but two,—viz., one at the University of Budapest and the other at the University of Kolozsvár—have alone the right of issuing the diploma of secondary teacher.

The examination of the candidates for secondary teaching covers two branches, viz.:—(I) General and (II) Special. All candidates must shew a knowledge of pædagogy, of Hungarian literature, and of Modern History. The special branches comprise the following:—

(i) Classical Philology, (ii) Latin and Hungarian Philology, (iii) French and Hungarian Philology, (iv) German and Hungarian Philology, (v) German and Hungarian Philology, (vi) German and French Philology, (vii) History and Latin Philology, (viii) History and Geography, (ix) Geography and Natural History, (x) Natural History and Chemistry, (xi) Mathematics and Physics, Mathematics and Descriptive Geometry.

The actual examination is divided into three parts as follows:—

(i) Preparatory; (ii) special; (iii) pædagogic, each consisting of written and *viva voce* parts. In (i) the candidate must prove that he has a grasp of the principles or theory of his special group; in (ii) that he is *au fait* in the scientific details of his group; in (iii) he has to shew that he recognises the value in teaching of:—

(*a*) Logic; (*b*) Psychology.

And, further, that he is acquainted with the history of modern pædagogy, and that he is *au courant* with all the phases of the development of public instruction.

Admission to the examination without previous University study is made only in exceptional cases, and when the erudition of the candidate is beyond all question.

The duration of service is thirty (30) years, but if at the end of ten (10) years the teacher should become incapacitated, he has a pension of 40 per cent., augmenting 3 per cent. each year. There is an increase of salary every five years to the salary of professors. To be appointed a titular professor or teacher one must be an Hungarian citizen, and have served several years as an assistant, or rather as a *substitute* teacher.

The teachers of secondary schools maintained by the State, and those maintained from the Catholic foundations, are appointed, those of the autonomous "confessional" schools are elected, excepting, of course, those appointed by the Minister in virtue of his right through subsidy.

The teachers of communal schools are also elected, but have not the definite title of professor until the approval of the Minister has been accorded. The salaries of the staff of the secondary schools are paid from the following sources:—

Class of School.	Salary from.
(1.) Public Schools	State Treasury.
(2.) Royal Catholic Schools	School Foundations.
(3.) Schools of Religious Orders	Religious Order itself.
(4.) Autonomous Confessional Schools (Reformed, Lutheran, Unitarian, Greek Orthodox). ...	Respective authorities.
(5.) Communial Schools	Communes.

23. *Time devoted to Teaching.*—In a completely-equipped school a director engages to devote ten hours per week, and in an incomplete school perhaps as much as fifteen hours per week. Professors devote eighteen hours per week, the drawing-master twenty hours. Those who devote more than this number of hours receive additional salary. As in Austria, teachers have sufficient leisure to maintain touch with general progress in all departments of knowledge of importance to them and on their special subjects.

24. *General Matters.*—The older Gymnasia and Realschools of Hungary were established in buildings not specially constructed for the purpose. To-day the greater number of such institutions possess either new buildings or the old ones have been altered to respond as far as possible to modern ideas.

In their official documents they state that "*the choice of the site, the design of the building, the proportions and lighting scheme of the class rooms are deemed to be of the last degree of importance.*" When the law of 1883 (No. XXX) was put in force, the whole question of school buildings was reviewed from the architectonic, pædagogic, and hygienic point of view.[2]

As illustrative of the style of building now approved for secondary schools, we may take an example of a school built about seven years back, and remark that some of the more recent buildings are still better. The gymnasium at Szamosujvár, designed by Alpár, cost about £15,700.[3] The residence of the Director and the concierges quarters are separate from the school building, as also is the hall for gymnastics. The following figures will give a general idea of the establishment:—

(1) Area of plot, 10,283 square metres.
(2) School site, 7,500 square metres, of which 2,200 square metres are actually occupied by buildings.
(3) Recreation area, 1,440 square metres.
(4) Gymnastic hall, etc., 2,360 square metres.
(5) Garden, 1,500 square metres.

There are two entrances and two staircases. Entering at the main entrance, there is a fine vestibule, with the principal staircase left and right, and large corridors with large windows.

Ground floor, right:—Study, library, cabinet for librarian, second study.
" left:—General hall, four school-rooms.
First floor, right:—Director's bureau, reception-room for parents, council hall, cabinet for physics, laboratory room, class room for physics.
First floor, left:—Four school rooms, cabinet for maps, etc.
Second floor:—Museum of natural history, cabinet of the Natural History Professor, cabinet of the Professor of Hygiene (the school physician) Professors' library, with work-room, room for those who abandon Greek and take up the compensation course, the cabinet of philology and history, the class-room for drawing, the cabinet of the drawing-master.

The "drawing" room has an area of 125 square metres. The gymnastic hall is 11·5 *metres* high externally, 5·6 internally, breadth and length 10 x 22 metres. Light comes from the left.

Between 1883 and 1898, 126 new secondary schools were built in Hungary, at a cost of about £750,000 for construction alone.

The question of the scientific equipment of the gymnasia will be dealt with elsewhere. It will suffice here to say that it is splendid.

The Commissioners were greatly impressed with the noble buildings, their excellent arrangement, their natural history museums, their physical and chemical equipments, the culture of the teachers, and the address of the pupils.

25. *Conclusion.*—Secondary education in Hungary, in so far as organisation, professional education of the teachers, and excellence of equipment in respect of general and scientific pædagogy and hygiene are concerned, leaves but little to be desired. There are, of course, problems yet to be solved. The Minister for Public Instruction, M. Wlassics, is endeavouring to eliminate all *unessential* elements from the *obligatory* course, with a view to relieving the strain on the pupils, and avoiding the injurious consequences of overwork. The question of *unification* is one of the problems most seriously considered. There are fine gymnasia and Realschools under very different jurisdictions. For example:—

(i) The Royal Catholic Gymnasium, II arrondissement, Budapést,
(ii) The Francis Joseph Institute, Budapést.
(iii) The Public Realschool, VI arrondissement, Budapést.
(iv) The Catholic Gymnasium at Szegea.
(v) The Endowed Gymnasium at Naszód.
(vi) The Public Gymnasium at Szamosujvár.
(vii) The Public Realschool at Brassó.
(viii) The Catholic Gymnasium at Szombathely.
(ix) The Royal Gymnasium of Ungvár.
(x) The Public Realschool at Pozsony.
(xi) The Lutheran Gymnasium at Pozsony.
(xii) The Public Realschool at Györ.
(xiii) The Public Gymnasium at Lugos.

All these are fine and finely-equipped schools, and educational experts in Hungary are anxious to see them all so co-ordinated in effort that a well-defined system shall result. The two elements in unification are administration and curriculum. In regard to the former, it may be affirmed that so long as only

[1] Contrasting this with the state of things often obtaining in Australian schools, one can understand how original work may be done and culture may be maintained in Europe and why it is difficult here.

[2] The late Director of Secondary Education in the Ministry of Public Instruction, Budapest, Klamarik Janos (ob. 1898), took a special interest in this question.

[3] These buildings could not be erected here for anything like the price.

only fully-qualified teachers are employed, and uniformity of régime maintained, the essentials of unification are administratively satisfied. In regard to the latter, an accepted arrangement of the different curricula, and a clear understanding as to relative academic dignity and privilege of the different secondary curricula, is all that is needed, assuming that these are not mere lists of subjects taught, but are programmes sketching out in detail the scope of each subject and the manner in which it is to be treated.

It may be noted that *the State policy of Hungary tends, as time rolls on, to give the State an ever-increasing control of secondary schools, while its method of interference is benevolent, and in no way arbitrary.* Hungary, however, is aiming at that clearly-defined condition of things without which it is idle to talk of organisation; and in the judgment of that cultured people, the unification of education is extremely desirable.

There is one other point regarding unification which ought to be mentioned here—that is, the place of Latin in the Secondary Schools. It is so vexed a question, however, that it has been dealt with in a separate chapter (Chap. III).

CHAPTER XI.

Secondary Schools in Belgium.

[G. H. KNIBBS.]

1. *Introduction.*—In the preceding chapter, reference was made to the fact that the ideals in Hungarian secondary education are compared with those of Belgium. The remarks had more force as regards the former system of Belgium, however, than the present one. In the view of the Hungarian, the degree of unification in the Belgian system, even as it now stands, is not adequate.

The secondary schools may be divided into at least four kinds :—

(1) Royal Athenæums (*Athénées Royaux*)—that is, State establishments.
(2) Municipal or Communal schools, which are known as Colleges (*Collèges*).
(3) Confessional schools—that is, schools founded by different religious bodies.
(4) Higher Private schools, generally known as Institutes (*Instituts*).

The total number of Athenæums is not large. The municipal schools or colleges are equipped practically in the same manner as the State schools. Their plan of instruction must be that issued by the Government; their school regulations, books, and general arrangements must be ratified by the Government, and they are under official supervision. The "*Collèges*" are subsidised by the State, according to the size of the community, and it may be noted that *there are no Communal colleges which are not so subsidised.*

The Confessional schools are under the control of a Bishop or of a religious order, and such schools are very variously designated—*e.g., Collège, Institut, Séminaire, petit Séminaire, École, etc.* Some of these are supported by State and communal subsidy; they are then subject to the State supervision.

The schools wholly supported by religious orders have their own regulations and administration.

It will be sufficient to consider only the organisation of the Athenæums in detail.

2. *Organisation of Secondary Education.*—The Royal Athenæums are directly under the charge of the "*Ministre de l'Intérieur et de l'Instruction publique.*" The immediate head of the Department is the "*Directeur-général.*" It may be mentioned that the most complete scheme of organisation under religious bodies in Belgium is that under the Archbishop of Malines (Mechelen), the ecclesiastical capital of Belgium. The chief officer under the Archbishop is the "*Directeur-général d'instruction moyenne.*" Under the Director-General are the inspectors (*inspecteurs*), the directors of the schools (*préfet des études*), the professors (*professeurs*), and teachers (*maîtres*).

For general supervision and control of the secondary schools, the Government depends upon the following, viz. :—

(i) An Administrative Bureau (*Bureau d'administration*) for each Athenæum.
(ii) An Improvement Council (*Conseil de perfectionnement*).
(iii) The Inspectors (*Inspecteurs*).
(iv) Examinations (*Concours*).

The Administration Bureau consists of (*a*) the Burgomaster and his aldermen; (*b*) six persons appointed by the State, and double that number from the Communal Council, among whom shall be no active teacher. These latter are elected for three years.

The Improvement Council, meeting always in Brussels, has under review the curricula (*programmes des études*), the text-books, etc.; it proposes directors for the inspectors, reads their reports, and advises as to all possible improvements.

This

This Council consists of from eight to ten members :—A councillor of the Court of Cassation, a former vice-president of the Chamber of Deputies, a permanent provincial representative, the director of the Military School, and six University professors. Besides these ordinary members, the *Sécretaire-général* of the Minister, the *Directeur-général* of higher education, the inspectors, and four of the Minister's nominees from among the directors and professors of the Athenæums, are members of the Council. It meets four times yearly.

The inspection is carried out by—

(*a*) A general inspector ; (*b*) an inspector for mathematics and the natural sciences ; (*c*) an inspector for ancient languages, history, and geography ; (*d*) a special inspector for gymnastics ; (*e*) two inspectors and two sub-inspectors for drawing.

The inspectors must visit the schools at least yearly ; they take part in the instruction ; test the scholars' knowledge personally ; and presents reports and recommendations addressed to the Minister concerning the teaching staff. Their respective rank, as indicated by their salaries, is :—

(1) General inspectors ; (2) special inspectors and inspectors of gymnastics ; (3) inspectors of drawing ; (4) assistant-inspectors.

The examinations are instituted once a year, and are held on the same days throughout the kingdom. They extend over the whole province of the instruction, and last four days. [1]

3. *The Teaching Staff.*—Some reference has been made already to the teaching staff. The Director resides in the Athenæum, and is the chief of its administration. *He takes no regular part in the instruction*, but devotes four hours weekly to attendance at the various lessons being given, thus seeing the work of each professor once in two months. He reports to the Government concerning the teaching, the arrangement of the instruction, the school books ; and once a year he reports also concerning the standing of the whole school.

He holds conferences with the teaching staff, discussing opinions regarding the teaching methods, and matters of similar interest. [2]

Besides the instructor in religion, there are, in each Athenæum, principal teachers (professors) for the seven humanistic classes ; and, further, at least two professors for French, the same for history and geography, for mathematics, natural science, commercial science ; and for the modern languages, Flemish, German, and English. There are also masters for drawing, music, and gymnastics.

Teachers are not permitted to have pupils as boarders except by express permission of the administration, nor can they give private lessons except by the director's permission. The class-ordinary (directeur de classe) is appointed each year.

Supervising masters or proctors are known either as *maîtres d'études* or as *surveillants ;* these, strictly speaking, should give no instruction whatever, but have the oversight of the pupils outside of school hours, they supervise those who are subject to detention. They give such general assistance as the Director may indicate.

There is no general rule as to the hours each teacher is occupied, but, on the average, they are about 18 weekly.

Pensioning off occurs on application at 55 if there be 30 years' service, and in the discretion of the authorities at 60 if there be 15 years' service. In any case 10 years' continuous service is necessary to establish claim to pension ; if, however, an accident in the exercise of his office unfit a teacher for duty, a pension is granted without regard to either age or length of service. The pension is limited to two-thirds of the income and to an absolute amount.

The widows and orphans of teachers are also assisted from the Treasury.

4. *Qualification for Teaching Staff.*—In general, entrance into the higher office of teacher is permitted only to those who possess doctorates in philosophy. Among these five groups may be distinguished, viz., those who take—(1) Philosophy, in the more restricted sense ; (2) History ; (3) Classic philology ; (4) Romanic philology ; (5) Germanic philology.

The period of study for any one of the five is at least four years. After the first two years of the four (the candidature), a written and oral examination in Greek, Latin, modern languages, philosophy (*i.e.*, ethics, logic, and psychology), history, including the most recent, must be passed, and is obligatory for all. The doctorate examination follows after the second two years. The following conditions will explain the state of qualification more clearly :—

(i) *Philosophy*, includes also Greek and Latin authors.
(ii) *History.* The history of either ancient or modern literature may also be required.
(iii) *Classic Philology*, includes comparative grammar.
(iv) *Romanic Philology*, includes Latin authors.
(v) *Germanic Philology*, comprehends English, Flemish, German, and also the history of recent philosophy.

For each group the history of pædagogy and methodology must also be taken, and an original thesis presented on a *special* subject. Besides this a dissertation (written or printed) relating to one of the subject-matters of the examination must be offered.

Those who desire to be secondary teachers must further give a test-lecture in one of the subjects of instruction in the Athenæum.

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[1] Those who are interested in the Belgian examination scheme may refer to Descailles' "Histoire des Concours généraux de l'Enseignement primaire, moyen et supérieur en Belgique, 1840-1881," Mons, 1883 ; also to Waltzing's "50 versions latines, etc., etc., donnés aux concours généraux," Namur, 1891.

[2] Autocratic dictation by directors and inspectors is not helpful ; the method of conferring gives far better results.

The doctorate in mathematics and physics involves all in the first examination passing in logic, psychology, ethics, differential and integral calculus, the fundamental elements of statics, mechanics, astronomy, experimental physics, inorganic chemistry, crystallography. For the degree examination, the higher analysis in mathematics, mathematical physics and astronomy, the elements of the calculus of probability and theory of least squares, outlines of the history of the mathematical sciences have to be taken. A selection must then be made for a thorough examination in one of the following, viz. :—(1) Higher analysis ; (2) higher geometry ; (3) analytical and celestial mechanics ; (4) mathematical astronomy and geodesy ; (5) experimental and mathematical physics.

Two test-lectures must be given, viz., one in mathematics, and one in experimental physics.

In the doctorate in natural history, chemistry in relation to the subject-matter must also be taken. The special examination covers the following groups, viz. :—(1) zoology ; (2) botany ; (3) mineralogy ; (4) chemistry and practical exercises are also required.

The scientific preparation of the Belgian secondary teacher is, as one sees, of the first rank. The professors in the Universities have nearly all made long student sojourns in France and Germany ; they teach their pupils to work independently in the various sciences. As every scientific reader knows, their original contributions to science are excellent.

The introduction to pædagogy is practically limited to its theory and history, and to methodology. Some practice in lecturing or teaching may be had as in the University of Louvain, but teaching seminaries of a high order are recognised among earnest teachers as necessary to the attainment of the best results.[1]

5. *Organisation of the Athenæums, etc.*—The history of Belgian education need not be referred back to an earlier period than 7th February, 1831, the date which the Belgians assign as the birth of their independence. The first law for secondary education bears the date 1st June, 1850, when ten Athenæums, similar to the French lyceums, were created. This law was supplemented by that of 15th June, 1881, increasing the number of Athenæums.

The law of 15th June, 1883, introduced Flemish in higher education in Flemish provinces. On the 20th February, 1884, the number of Athenæums was fixed at 20. On 6th February, 1887, it was decided that directors and professors other than those who passed through the normal schools of Liège and Gand should be doctors of philosophy (ès lettres et ès sciences). The laws of 10th April, 1890, and 3rd July, 1891, made the doctorate obligatory, and the normal schools were united with the University.

Since their institution, a considerable number of changes in the organisation and curricula of the *Athénées* and *Collèges* have been made. Originally these schools had two divisions, a humanistic and realistic, the latter being also called "professional." The former division had seven classes. The latter, omitting Latin and Greek, had a preparatory class, then a lower division with a three-year course, and finally an upper division of *three branches*, each with a two-year course. These three branches were (i) Commerce, (ii) Industry, and (iii) Science.[2] In 1874 a higher class was added thereto. A complete revolution however was made in the year 1881 ; the duration of the course was still kept at seven years, and the two lowest classes of both divisions were united for all pupils. After this a selection could be made among the following possible courses :—

(i) Limited schools of the "real" type, 1 year.

(ii) Complete Realschools, for commerce and industry, or preparatory to entrance into special institutions for the military profession, for mining, and for engineering.

(iii) Humanistic division, which admitted of the following selection, viz. :—

- (*a*) *Humanités complètes*, all courses.
- (*b*) A Greek-Latin division for literary, philosophic, and juristic studies.
- (*c*) A Latin school, preparatory for special schools or for mathematical and physical studies.
- (*d*) A Latin school, preparatory for natural science and for medicine.

In the Greek-Latin division (*b*) either English, German, or Flemish had to be taken, and in the two highest classes, mathematics and chemistry could be dispensed with, but in division (*a*) all were obligatory. In division (*c*) Greek was compulsory only for a year. Mathematics was the same as in the complete realschool. In division (*d*) Latin was compulsory for two years only. The modern languages were associated with the Realschools.

The Realschool consisted of a lower division of two years, the upper was divided into a scientific and a lower division for Commerce and Industry, each lasting three years.

This complicated system gave no satisfaction, and everybody was glad when it disappeared. By the Royal Decree of the 31st August, 1887, which is still in force, there are at the present time only the following :—

(1) A Greek-Latin division.

(2) A Latin division, more stress being laid on mathematics and natural science.

(3) A proper Realschool, that is one without Latin (section des humanités modernes).

More recently Flemish and modern languages were assigned a more prominent position, and Gymnastics and Drawing more fully organised.

The present curricula were practically fixed on 30th August, 1888 ; some modifications, however, were made on 22nd June, 1893, in connection with physical and commercial science.

The details of these curricula will be very briefly outlined hereinafter.

6.

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[1] For the general organisation of the secondary schools of Belgian the Commissioner is largely indebted to an account by Professor Dr. F. L. G. Collard, of the Faculty of Philosophy in the University of Louvain. Professor Collard's subjects are Greek and Latin literature, Pædagogy and the Latin language. He has spent several years in Germany making a study of pædagogy.

There were normal schools in Liège and Gand (Ghent) ; see sect. 5.

[2] It is important to bear this in mind, for crude ideas as to the proper organisation of education often run in the direction from which Belgian intelligence has seen fit to depart.

6. *Synopsis of Curriculum.*—The three sections abovementioned are practically the same as the Gymnasium, Realgymnasium, and Realschule, and are respectively known as the "*humanités grecques-latines*," "*humanités latines*," and "*humanités modernes*." The several curricula may be tabulated as follows :—

1. Greek and Latin Humanities.

WALLON PROVINCE.

Subjects.	Classes—Hours per week.							
	VII.	VI.	V.	IV.	III.	II.	I.	Total.
Religion	2	2	2	2	2	2	2	14
Latin	6	7	8	8	8	8	8	53
Greek	...	...	5	5	5	5	5	25
French	7	6	3	3	3	3	3	28
Flemish or German (obligatory)	...	5	3	3	3	3	3	20
German or Flemish (optional)	...	...	...	(2)	(2)	(2)	(2)	(8)
English	...	...	...	(2)	(2)	(2)	(2)	(8)
History	2	2	2	2	2	2	2	14
Geography	1	1	1	1	1	1	1	7
Mathematics	3	3	3	3	3	3	3	21
Natural Science	...	...	...	2	2	2	2	8
Drawing	2	2	2	(2)	(2)	(2)	(2)	6+8
Singing (optional)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(7)
Gymnastics, 2 hours during recreation ...	...	...	...	...	...	...	...	...
Total hours of obligatory lessons ...	23	28	29	29	29	29	29	...

The subjects, the hours for which are bracketed, are optional.

For the Flemish province the following subjects are differently taken :—

FLEMING PROVINCE.

Subjects.	Classes—Hours per week.							
	VII.	VI.	V.	IV.	III.	II.	I.	Total.
French	6	6	3	3	3	3	3	27
Flemish	6	6	3	3	3	3	3	27
German or English	...	...	...	2	2	2	2	8
English or German	...	...	...	(2)	(2)	(2)	(2)	(8)
Total	28	29	29	31	31	31	31	...

2. Latin Humanities.

WALLON PROVINCE.

Subjects.	Classes—Hours per week.							
	VII.	VI.	V.	IV.	III.	I	I.	Total.
Religion	2	2	2	2	2	2	2	14
Latin	6	7	8	8	8	8	8	53
French	7	6	3	3	3	3	3	28
Flemish or German	...	5	3	3	3	3	3	20
German or Flemish	...	...	...	(2)	(2)	(2)	(2)	(8)
English	...	...	...	(2)	(2)	(2)	(2)	(8)
History	2	2	2	2	2	2	2	14
Geography	1	1	1	1	1	1	1	7
Mathematics	3	3	4	4	6 3	6 3	8 3	34 23
Natural Science	...	...	2	2	3	2 4	... 4	9 15
Drawing	2	2	2	2	2	2	2	14
Singing	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(7)
Gymnastics (as in Gymnasium)	...	...	...	...	...	...	...	...
Total	23	28	27	27	30 27	29 28	29 28	...

In Classes III, II, I, in Mathematics, and in Classes II and I in Natural Science, there is a bifurcation, and pupils may follow either course. In the former only, that is with the larger number of hours, are practical exercises included.

For the Flemish province, the variation is identical with that previously indicated. 3.

3. Modern Humanities.

WALLON PROVINCE.

Subjects.	Classes—Hours per Week							
	VII.	VI.	V.	IV.	III.	II.	I.	Total.
Religion	2	2	2	2	2	2	2	14
French	8	8	7	7	5	5	6	46
Flemish or German (principal language).	6	6	3	3	3	3	3	27
German or Flemish (secondary language).	...	2	4	3	3	3	3	18
English	...	...	...	(2) 2	(3) 3	(3) 3	(2) 2	(10) 10
History	2	2	2	2	2	2	2	14
Geography	1	1	1	1	1	1	1	7
Mathematics	3	3	4	4	6 3	6 3	8 3	34 23
Natural Science	...	...	2	2	3	2(a) 4	...(a) 4	9 15
Commercial Science	...	...	1	2	... 3	... 4	... 4	3 14
Drawing	2	2	2	2	2 (2)	3 (2)	3 (2)	16 8+(6)
Singing	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(7)
Gymnastics (as in Gymnasium)	...	...	...	...	...	...	...	...
Total	24	26	28	28 30	27 28	27 30	28 30	...

In the Flemish province are the following variations:—Class VII. French and Flemish, 7 hours; German as compulsory second language has only two hours in Class I.

The following brief observations as to methodology will perhaps be sufficient to give a general idea of the most important matters:—In each language definitions and rules are to be exemplified, the pupils being made to derive the rules from examples whenever possible. Syntactic peculiarities are not to be learnt dogmatically, but in relation to the subject-matter of comparative grammar. The reading matter is uniformly selected with regard to its educative and ethical value, so also is the material for memorising.

It is impressed upon the teachers that the *modern languages are not simply to be readily understood, facility in the oral and written use of them is to be aimed at.* In the earlier part of the studies, all peculiarities and exceptions are to be put on one side, and only the most important leading rules given. By dictation and speech the education of the ear is to be furthered, and vocal facility is to be achieved by actual practice.[1]

In the Flemish province, history, geography, and natural science are taught in Flemish, and the terminology in all subjects is given in both French and Flemish. For the teaching of such subjects, it is required that the school-room shall be supplied with pictures, photographs, plaster of Paris models, globes, charts, atlases, etc., and moreover, in the great cities, the teachers are required to let the pupils know something of the archives and manuscripts that are to be found therein.

7. *Details of Curricula—Greek.*—As previously stated, the course of study is divided into three sections in the Athenæums of Belgium, viz., the Greek-Latin Humanities, the Latin Humanities, and the Modern Humanities, the latter, however, being again divided into the Scientific branch and the Commercial and Industrial branch. Greek belongs only to the first section. Latin and German are identical in the Greek-Latin and Latin Humanities Sections, and French, History, and Geography are the same for the three Humanity sections. The following indications of their programmes will give a fuller idea. Greek is primarily dealt with[2]:—

Greek-Latin Humanities section—

Greek.—Reading and writing. Regular declensions. Nouns, pronouns. Regular conjugations in ω. Elementary ideas of syntax: rules of agreement, employment of cases. Grammatical analysis. Memory exercises. Exercises, principally oral. Authors, etc.: Greek grammar; a chrestomathy; selected fables from Æsop.

4th Class.—Recapitulation of the declensions and regular conjugations. Conclusion of the lexigraphy. Principles of the derivation and composition of words. Syntax; Recapitulation of the foregoing with some developments. Memory exercises. Exercises, principally oral. Translations. Grammatical analysis. Authors: A Greek grammar; Lucian; Dialogues of the Dead; Babrius, Fables; Æsop's Fables, fluent translation. Biographical and literary remarks on the authors read.

3rd

[1] Reference may be made to Chap. XXII of the Interim Report, pp. 197-211. See also "Bilingual Teaching in Belgian Schools," by T. R. Dawes, M.A. (Lond.), Head Master of the Pembroke Dock County School. Cambridge University Press, 1902.

[2] For this sketch the Commissioner is indebted to the "Programme des études dans les Athénées royaux." Bruxelles, E. Guyot, rue Pachéco 12, 1902.

3rd Class.—Recapitulation of the lexigraphy and of the principles relative to the derivation and composition of words : Syntax : the Article ; the employment of cases, moods and tenses. Various forms of the statement. Syntax of co-ordinate and subordinate statements. Memory exercises. Exercises, principally oral. Translations. Grammatical analysis. The Ionic dialect. Authors : A Greek grammar ; Xenophon : Anabasis Selections from Herodotus. An anothology. Biographical and literary remarks on the authors.

2nd Class.—Recapitulation of the syntax and difficulties of the lexigraphy. The Epic dialect Ideas on the Homeric versification. Memory exercises. Translations. Authors : A Greek grammar ; Homer ; Lysias ; Isocrates or a treatise of Lucian ; Herodotus or Xenophon (cursive translation). Biographical and literary remarks on the authors.

Rhetoric Class—(I). Recapitulation of the principal difficulties of grammar. Memory exercises. Translations. Authors : A Greek grammar ; Demosthenes ; a discourse. Plato, Homer, Lysias, Isocrates or Lucian. Biographical and literary remarks on the authors.

8. *Latin.*—Latin is taken in the "humanités grecques-latines," and also the "humanités latines" in every class from the seventh to the Rhetoric Class. Among the authors in Class VII may be mentioned Lhomond's *Epitome historiæ sacræ*. The simpler elements are taken in this the lowest class, such as declensions and regular conjugations, the first elements of syntax, general rules of agreement, the principal use of cases, memorising, exercises in translation. Oral reproduction of exercises. Grammatical analysis. Reading of authors, etc. This syllabus of work steadily increases in extent and difficulty as one proceeds in the classes, the question of syntax being more fully dealt with, the authors more varied, and greater demand being made on the originality of the student, and on his thinking powers. In each class the work done in the preceding class in recapitulated. In the Rhetoric Class (the last) Grammar is altogether omitted, and the work is composition and translation.

Among the Authors from Class VI to I may be mentioned :—

VI. De viris illustribus urbis Romæ, Lhomond's Epitome historiæ sacræ.
V. Phædrus (selected fables) ; Cornelius Nepos ; Lhomond's De viris, etc.
IV. Cæsar, De bello Gallico ; Ovid, Metamorphoses ; Cornelius Nepos ; Prosody is commenced in this class, and hexameters and pentameters are scanned.
III. Livy, a book of ; Virgil, the Eclogues and Georgics ; Cæsar, De bello Gallico ; Ovid, Metamorphoses ; exercises in hexameters and pentameters.
II. Cicero, a smaller oration ; Virgil, Æneid ; Horace, Odes ; Sallust, extracts ; Livy or Cicero, De Senectute or De Amicitia ; Ovid, fluent translation. The principal metric forms of the ode are studied in this class.
I. Cicero, one of the larger orations ; Horace, selected Epistles and Satires ; the Ars Poetica ; Cicero, one of the small philosophical treatises, Brutus ; Pliny the Younger, Epistles ; Quintus Curtius ; Virgil, Æneid.

French is taken in the three branches, that is the Greek-Latin, the Latin, and the modern humanities.

9. *French.*—The gradation in difficulty is but slight from one class to another. From the 7th to the 5th classes the work is almost identical, except that in the latter an author (La Fontaine) is introduced as well as a chrestomathy. Reading aloud, memory and elocutionary exercises, and the syntactical part of grammar are common to all the classes until the rhetoric class is reached, where the work is much more advanced, being chiefly critical, analytical and literary. Exercises in redaction and elocution are also features of the three lower classes. Great attention is paid to style (genre).

The prescribed authors from the 5th to the Rhetoric Class are as hereunder:—

V. } La Fontaine.
IV. }
III. Boileau, Art poétique, Chant 1er, ; Satires et Epîtres.
II. Boileau ; Buffon, selected passages. Literary notions of the idyll, elegy, ode, epigram, satire, and didactic poem are given.
I. Corneille, Racine, Molière. An oral exposition on a subject, indicated by the professor, is given.

10. *History.*—The following is about the course in history :—

7th Class.—General aperçu of universal history.
6th Class.—*Antiquity* (with elementary ideas as regards the mythology and geography of Greece, Italy, and the Roman Empire). *The Middle Ages.*—As far as the Crusades (exclusively).
5th Class.—Rapid rehearsal of the programme of the preceding class. History of the *Middle Ages* from the Crusades and the history of *modern times*, as far as 1789.
4th Class.—Short aperçu of contemporaneous history. History of Belgium.
3rd Class.—Antiquity and the Middle Ages as far as the Crusades (exclusively).
2nd Class—Rapid repetition of the programme of the preceding class. *Middle Ages*, from the period of the Crusades. Modern times as far as 1789.
Rhetoric Class.—History of Belgium. Contemporaneous history, since 1789.

11. *Geography.*—A general idea of geography is given in the 7th class ; this becomes more particularised as the classes advance. In the 5th class, general facts concerning all the continents except Australia are treated of. In the 4th, 3rd, and 2nd classes the instruction is more detailed regarding the knowledge of the continents, but in the Rhetoric Class the minutest details of the geography of the fatherland (Belgium) are considered, as well as the cosmography, astronomy, physical, political, and economical geography of the earth as a whole.

12. *The Germanic Languages (Flemish, German, and English).*—In the Flemish part of Belgium, the following are the modern language requirements :—

In the Greek-Latin and Latin sections, Flemish is obligatory ; and German *or* English.

In the commercial and industrial division of the modern section, the three languages are required ; in the scientific division, Flemish and German.

In the Wallon region, the following is demanded :—

In the commercial and industrial division of the modern section, the three languages.

In the scientific division, Flemish or German.

In the Greek-Latin and Latin sections, only one language, viz., Flemish or German.

Wallon Province.

German is not taught in the lowest class, and there is but slight variation in the programme from Classes VI to IV. Special attention is paid to pronunciation in Class VI. The work chiefly consists in these three classes of : reading aloud, grammar ; the essentials of lexigraphy. Dictation. Translation. Exercises. Explanation of easy pieces. Memory and elocutionary exercises on these pieces. A chrestomathy. In Class III there is some extension of the work, syntax being more thoroughly studied, and selections from the principal authors of the 19th century are explained, and memory and elocutionary exercises developed on these selections, and there is also oral reproduction of home-reading. In the second and rhetoric classes the work is much more extensive. The syllabus for Class II is : Systematic account of syntax. Indispensable notions of scansion. Versions. Exercises. Redactions. Explanation of selections, and a complete prose work from the principal authors of the 19th century (for Flemish), from the 18th and 19th centuries (for German). Memory and elocution exercises on these selections. Biographical and literary account of the explained authors. Oral reproduction, and oral accounts of the reading done at home under the supervision of the teacher. Reading. A chrestomathy. For the *Rhetoric Class* the programme (omitting the items that are identical with the second class) is :—Explanation of a master-piece in prose and another in verse. Memory and elocution exercises on the pieces expounded. Oral reproduction, and oral accounts of reading done at home by the master's direction. These selections should be made with a view, as much as possible, of giving the pupils an idea of the principal literary periods, and of making them acquainted with the writers of the classical and the contemporary period.

In the Flemish Athenæum.

Flemish.—The characteristics of the Flemish programme are very similar to those of the German one. In the 7th Class Flemish is a subject of instruction, and in the other classes it is steadily developed. Attention is given to grammar and analysis mainly in the three lower classes, while in the three higher ones the time is devoted mainly to composition, translation, etc.

Programme common to all the Athenæums.

4th Class.—Pronunciation, reading, and (in German) writing. Grammar: The essentials of lexigraphy ; general ideas concerning syntax. Dictation. Translation. Exercise. Explanation of easy pieces. Memory and elocutionary exercises on these. A chrestomathy.

3rd Class.—Reading aloud. Grammar : balance of lexigraphy and of syntax. Dictation. Translation. Explanation of selections. Memory and elocution exercises on these pieces. Reading : A chrestomathy.

2nd Class.—The programme for this class is the same as that for the 3rd, except that there is no dictation. Biographical and literary sketches, regarding the authors read, are a feature.

Rhetoric Class.—This programme is identical with that of the preceding class, except that in this class some idea of scansion is given.

Detailed treatment of the language programme in the modern humanities may be omitted.

13. *Mathematics.*—In mathematics the programme is as follows :—

7th Class.—Explanation of the decimal numeration of whole numbers. Rational addition and subtraction. Definitions and rules (without demonstration) of the multiplication and division of whole numbers. Short problems on whole numbers. Characters of divisibility by 2, 3, 4, 6, 9, and 11 (without demonstration). Vulgar fractions, transformations which do not alter the value of a fraction. Simplification and reduction to the same denominator (only those fractions the denominator of which can be mentally found are to be operated with). Definitions and rules (without demonstration) of the fundamental operations with fractions. Easy problems. Decimal numbers. Numeration. Rules (without demonstration) of the fundamental operations on decimal numbers. Initial study of the metric system. Applications.

6th Class.—Demonstration of the rules relative to the multiplication of whole numbers, to the multiplication and division of vulgar fractions and decimal numbers (representing the latter by vulgar fractions).

Demonstration of characters of divisibility by 2, 4, 5, 9, 3 ; proof by 9 of the multiplication table. Problems on simple interest, commercial discount, mixtures, and alligations. Problems on the rule of three, solved by the method of reduction to a unity. Detailed study of the metrical system.

5th Class.—Recapitulation of the programme of the preceding class. Interversion of the factors of a product—consequences of this principle. Variations which prove the quotient and the remainder of a division when the dividend and the divisor, or one alone, are made a certain number of times greater or smaller. Division by a product of several factors. Demonstration of the character of divisibility by 11. Proof by (9 and 11) of multiplication and division. Problems relating to simple interest, discount, annuity, tare, mixtures, alligations, common exchange, partnership, and in general as to quantities which are calculated according to a given rate as much for 100 or for a 1,000. Theory of generalised fractions (quotient indicated by two fractions). General formulæ relative to problems of interest and mixtures. Definitions of terms:—arithmetical ratio, geometrical ratio. Arithmetical proportion. Arithmetical mean. Geometrical proportion, equality of the product of the extremes and mean terms. Consequences of this principle. Fourth proportional. Simple and compound "rule of three." Calculation of surfaces and volumes (in the most simple cases). Calculation of the weight of a body.

4th Class—Arithmetic.—Recapitulation of the programme for the 5th class. Demonstration of the rule for the division of whole numbers. Finding the greatest common divisor of two whole numbers by successive divisions. A number which divides a product of two factors and which is prime as regards one of them divides the other factor. Consequences of this principle. A number is decomposable only into a single system of prime factors. Decomposition of numbers into prime factors. Finding the divisors of a number. Finding the greatest common divisor and the least common multiple by decomposition into prime factors.

Algebra.—Transformation of equalities. Complete study of proportion. Proportional parts. Equations. Solution of equations and numerical problems of the first degree to one unknown. Literal problems. Applications of the formulæ found to numerical problems.

Geometry.—First book. Construction, with the rule and compass, of figures from numerical data.

3rd Class.—Recapitulation of the algebra and geometry of the 4th class. *Algebra.*—Solution of the equations of the first degree, with two and several unknowns. Solution of simple general problems. Application of the formulæ to numerical examples. Interpretation of negative, indeterminate, and infinite values.

Algebraical Calculation.—Fundamental operations. Square and cube of a binomial. Divisibility of an integral polynomial in x *by* $x-a$; application to the division of $x^m \pm a^m$ *by* $x \pm a$, form of the quotient. Algebraical fractions, operations, simplification of fractions, both terms of which are monomials, binomials, or perfect square trinomials.

Geometry.—Properties of the circle and of figures which result from its combination with the straight line. Measurement of angles. Problems: Drawing of perpendiculars, parallels, construction of triangles and circumferences according to given conditions. Evaluation of plane areas. Principal relations between the elements of a triangle. Proportional lines. Similar figures; properties of secants. Determination of the elements of a triangle (heights, medians, radius of inscribed or circumscribed circles), surface in functions of the sides, numerical applications. Problems on proportional lines, similar for equivalent figures; construction of a rectangle, knowing the surface and the sum or the difference of the sides; portion of a straight line in mean and extreme ratio.

Land Surveying.—Measurement and division of plots of land.

2nd Class.—Recapitulation of the preceding course. *Algebra.*—Square and square root of numbers and polynomials. Calculation of radicals of the second degree. Solution of equations of the second degree; properties of roots; decomposition of the trinomial of the second degree into factors. Discussion of the equation $ax^2+bx+c=0$. Biquadratic equations. Their solution and discussion. Transformation of $\sqrt{(A \pm \sqrt{B})}$. Problems of the second degree. Solution of some easy systems of equations of higher degrees with several unknowns.

Maximum of the product of two factors having a constant sum. Minimum of the sum of two factors having a constant product, [the identity of $(x+y)^2=(x-y)^2+4xy$ is relied upon], applications. Arithmetical and geometrical progressions. Insertion of mean proportionals; the sum of terms. Theory of logarithms defined by two progressions, use of tables; negative characteristics. Compound interest and annuities.

Geometry.—Recapitulation of the 3rd book. Regular polygons. Measurement of the circle and of the circumference. Determination of π (method of isoperimeters).

Geometry of Space.—Straight lines, planes, parallels, perpendiculars, measurement of dihedral angles, equality of trihedrals.

Trigonometry.—Definition of trigonometrical lines, formulæ relative to the right-angled triangle. Use of the tables, numerical calculation, applications.

Rhetoric Class.—Recapitulation of the 5th book, and of progressions and logarithms.

Algebra.—Life-annuities, loans.

Geometry.—General properties of the prism, pyramid, measurement of volumes and surfaces of these bodies and frustum of prism and pyramid. Sphere, plane sections, tangent plane, intersection of two spheres, pole of a circle drawn on the sphere; spherical angles and their measure. Surfaces and volumes of the cylinder, of the cone, truncated cone, and of the sphere.

Trigonometry.—Fundamental formulæ, solution of any triangles whatsoever, numerical exercises, easy topographical exercises, the graphometer and level.

In the sections "humanités modernes" and "humanités latines" there is a different treatment. The 7th and 6th classes are as the preceding. The 5th and 4th classes are practically equal to the 4th and 3rd of the "humanités grecques-latines," that is to say the classic class is *less* advanced. Then in the 3rd class the work is different for the scientific division and the commercial and industrial division, and, again, the pupils in the "humanités latines" section have the choice of two series marked A and B hereinafter.

The work is of a character well worth noting, and is, therefore, given in full. To discriminate between this and the previous programme we shall arbitrarily call this *special* mathematics.

14. *Special Mathematical Course in the Modern and Latin humanities.*—In the *Scientific division* the programme is as follows :—

3rd Class.—Recapitulation of the work in the previous classes. *Arithmetic.*—General theory of the divisibility of numbers. G.C.M. and L.C.M. Theory of primes. Fermat's theorem. Conversion of ordinary into decimal fractions, and *vice versâ*. Numerical approximations. Principal ancient measures in use in the country. Principal foreign measures: their reduction to the decimal system. Operations with *complex numbers*. Cube root of numbers.

Algebra.—Discussion of general equations of the first degree with one or two unknowns. Complete discussion of the general equation of the second degree. Equations which are reducible to the equations of the second degree. Reductions of expressions of the form $\surd(a + \surd b)$ and $\surd(a + b\surd -1)$. Properties of trinomials of the second degree. Questions of maxima dependent upon trinomials of the second degree. Progressions. Problems. Theory of logarithms, explained by progressions. The use of tables. Application of questions of compound interest to annuities.

Geometry.—Regular polygons. Measurement of the circle. Determination of π. Problems. The theory of transversals.

Rectilinear Trigonometry.—Relations among trigonometrical lines. Multiple arcs corresponding to a given trigonometrical line. Fundamental formulæ. Discussion and transformation of these. Construction and use of trigonometrical tables. Development of formulæ adapted to logarithmic calculation. Solution of triangles. Numerical calculation. Application of formulæ to the solution of various problems.

Surveying and Levelling.—Surveying by means of the squares, graphometer, and plane-table. Exercises in the field. Plan-drawing.

2nd Class.—Recapitulation of the above. *Arithmetic.*—Theory of different systems of numeration, and of fundamental operations with whole numbers in any system whatsoever. Character of divisibility by a divisor $B^n \pm r$. Abridged method for affecting multiplication, division, and the extraction of the square root.

Algebra.—Use of indeterminate coefficients. Application of the method of indeterminate coefficients to the theory of divisions; to the investigation of the root of a polynomial; to the investigations of the relations which must subsist between the coefficients of an algebraical expression in order that it may satisfy certain conditions. Solutions of the equations of the first degree. Maximum of the product $x^m y^n$ when $ax + by$ is constant. Maximum or minimum of a function of the second degree of two variable continued fractions and continued periodic fractions. Indeterminate analysis of the first degree. Theory of arrangements, permutations, and combinations, with and without repetition. Binomial theorem of Newton. Formation of the powers of a polynomial. Extraction of roots of numbers and of polynomials. Summation of the similar powers of any terms and of an arithmetical progression. Powers and roots of monomials higher than the second degree. Calculation of roots, fractional or negative exponents. Exponential equations. The theory of logarithms by means of the exponential equation. Agreement of the two definitions. Modulus. Napierian logarithms.

Plane Geometry.—Division of harmonic and anharmonic pencils. Poles and polars. Pascal's theorem and Brianchon's theorem for the circle. Various exercises in geometry.

Geometry of space.—The plane and right lines considered as in space. Measurement of a dihedral angle. Principal properties of the solid angle. Supplementary trihedrons. Principal properties of polyhedrons. Their volumes and convex surfaces. Theory of similitude and symmetry. Planes, axes, and centres of symmetry. Spherical triangles. Principal properties of the cylinder, cone, and sphere. Convex surface and volume of these bodies and of their segments. The regular polyhedra.

Rhetoric Class.—Thorough recapitulation of the principal theories of arithmetic, algebra, geometry, and trigonometry, with new applications of these theories.

Algebra.—Elementary theory of determinants of two or three rows. Definitions, determinants of various orders, elementary theorems and properties for the calculation of determinants. Applications to the solution of a system of n equations of the first degree.

Spherical Trigonometry.—Formulæ relative to triangles. Solution of given triangles determined by given sides and angles, and other simple cases. Spherical excess. Radius of inscribed and circumscribed circles. Distance of two points upon the terrestrial surface. Reduction of an angle to the horizon. Volumes of the parallelepiped and of the tetrahedron as a function of their edges and angles. Exercises.

Analytical Geometry.—Principle of homogeneity. Construction of algebraic expressions. Determinate problems. Rectilinear co-ordinates, their transformation. Polar co-ordinates. Various forms of the equation of the straight line. Intersection of two straight lines. Equations of the bisectors of angles formed by two straight lines. Area of a triangle expressed as a function of the co-ordinates of its vertices. Construction and discussions of equations of the second degree of two variables. *Invariants* and *discriminants*. General theory of tangents. Centres, diameters, axes, azympotes, loci, poles and polars. Simplification of the general equation of the second degree of two variables. Special forms of the equation when the curve is subjected to certain conditions. Abridged notation. Special properties of curves of the second degree. Analytical and geometrical demonstration of the same. Discussion and construction of geometrical loci represented by equations with polar co-ordinates. Problems. Conic sections. General theorems concerning conics. Intersection and similtude of two conics.

Descriptive Geometry.—Preliminary ideas and objects of descriptive geometry. Theorems and problems relating to a point, to a straight line and a plane. Simplest cases of rotation, etc.

In the *commercial and industrial division* geometry, algebra, and trigonometry are nothing like so highly developed. Numerous applications relating to ordinary questions of interests, annuities, discounts, foreign measures, exchange, arbitration, etc., etc., are a feature.

In the Latin humanities there are, as already mentioned, two divisions, viz., A, which is the same as the scientific series, and B, which is identical with the commercial and industrial series.

15.

15. *Natural Science.*—Natural science is not taken in the three lower classes, and is somewhat elementary in form in the 4th class, in which *Zoology* and *Botany* are dealt with. In the 3rd class these subjects are more fully treated than in the preceding one, particularly so perhaps as regards Botany. In the second and highest classes Zoology and Botany are altogether omitted, and the elements of other branches of Science are treated of, such as, in the 2nd Class, *Physics*, *Hydrostatics*, *Heat*, *Light*, and *Acoustics*; in the Rhetoric or highest class under the title Physics, magnetism, electricity, and meteorology are taught, also practical Chemistry.

It may be mentioned that there are herborisations in connection with the Botany.

The Latin humanities section may take either of the two courses, C or D, say. C is the division which must be taken by the scientific division in the modern humanities section, and D is that belonging to the commercial and industrial division. In both sections the work in the 5th, 4th, and 3rd classes correspond to the 4th, 3rd, and 2nd classes of the "Greek-Latin humanities" section.

16. *Physics and Meteorology.*—These subjects belong to C.

Magnetism.—Natural and artificial magnets. Reciprocal action of poles. Magnetic liquids. Magnetic substances. Magnetisation by influence. Coercive force. Directive action of the earth. Magnetic meridian. Compass. Declination and inclination. Intensity.

Electricity.—Its development. Hypotheses as to its nature. Static electricity. Conductors and non-conductors. Two kinds of electricity, their reciprocal actions. Electrification by influence. The electroscope. Electric machine. Electrophorous condensers. Leyden jar. Effects of electricity. Electricity of clouds. Lightning conductors. Dynamic electricity. Galvanic experiment. Voltaic pile. The theory of the pile. Daniell, Bunsen, and Leclanché cells. Oersted's experiment. Electric currents. Motions as to the laws of currents, and as to electric units. Effects of a cell. Electro-plating. Induction, conceptions as to magneto-electric machines and dynamo-electric machines. Electric telegraph. Telephone. Electric light.

Elements of Meteorology.—The pupils are familiarised with the handling of meteorological apparatus, and make experiments bearing upon the course.

17. *Commercial and Industrial Division.—Second Class.—Physics, Meteorology, Chemistry.*—The first two subjects are the same as the preceding. The chemistry is as hereunder.

Chemistry.—Object. Difference between physical and chemical phænomena. Simple and compound bodies. Principal elements and their chemical symbols. *Metalloids*, preparation and study of their principal properties. Combination of hydrogen with chlorine, oxygen, nitrogen. Analysis and synthesis of hydrochloric acid, water, and ammonia. Law of volumes, of weights of definite proportions. Atoms and molecules. Atomicity. Grouping of the metalloids according to their atomicity. Equivalents. Combinations of oxygen and nitrogen. Law of multiple proportions, Study of the principal combinations of the metalloids with one another. Anhydrides. Acids, basicity of acids, salts, chemical formulæ, elements of thermo-chemistry.

Metals.—Physical properties, classification. Action of chlorine, bromine, iodine, oxygen, sulphur, and of the acids on the metals.

General physical properties of chlorides, bromides, iodides, oxides, hydrates, sulphydrates, metallic salts, and the preparation of these. Essential characteristics by which one may recognise the metals contained in the salts. Practical exercises.

18. *Chemistry and Mineralogy.*—These subjects are taken in the Rhetoric class.

Chemistry.—Recapitulation of the preceding course. Preparation of potassium, sodium, magnesium, aluminium. Metallurgy of iron, metal, zinc, copper, lead. Study of the compounds of these metals, and those of magnesium, calcium, barium, mercury, silver, platinum, gold; as they are found in the arts and in their natural state in Belgium. Study of several alloys.

Elements of Mineralogy.—Physical character of minerals, study of the principal kinds of common minerals.

Organic chemistry.—Composition of organic bodies. Organic analysis. Crystalline forms. Dimorphism, isomorphism, amorphism, allotropy.

Classification in series. Generalities as to the carbons $C^n H^{2n+2}$. Methylhydride. Petroleum. Generalities as to the alcohols of the series $C^n H^{2n+2} O$. Methylic alcohol preparations. Ordinary alcohol. Alcoholic fermentation. Distilleries and breweries.

Acetic acid and acetic fermentation. Wood-vinegar, preparation, acetates of lead and copper.

Palmitic, stearic (oleic) acid. Stearine candles. Ethylic ether; preparations; aldehydes. Action of chlorine upon the hydrocarbons, chloroform.

Hydrocarbons of the series $C^n + H^{2n}$, ethylene, preparation of coal-gas. Lactic acid and lactic fermentation; oxalic acid and urea.

Glycerine, natural fatty bodies, saponification. Tartaric acid and the various tartrates. Mannite, glucoses, sugars, starch, dextrine, cellulose, gums, benzene, camphors, resins, caoutchouc and gutta-percha.

Cyanogen and the principal compounds of cyanogen.

Indigo and dyeing.

Albuminous matters and their derivatives. Chemical manipulation, analyses, commercial tests.

Throughout the chemical manipulation, and in all the applications of the course, the *local industries* are kept in view.

19. *Commercial Science.*—The work commences in the 4th class.

Fourth Class.—Principal duties of traders according to the Code. Agents, and institutions in connection with local trade. Invoice and accounts of purchases and sales. Way-bills. Exchange notes. Promissory notes. Book-keeping by single entry. Auxiliary books. General theory of book-keeping by double entry. Commercial correspondence. Exercises by way of applying the preceding.

Third Class.—Repetition of principal parts of preceding course. Agents, etc., in connection with foreign trade. Subdivision of general accounts. Special accountancy. Consignees, traders, bankers, partners in a company. General ideas as to commercial law, especially referring to consignment and companies. Current accounts, and interests, according to the three methods. Annuity accounts. Commercial correspondence. Application exercises.

Second Class—Commerce.—Principles of accountancy, arbitration, currency, etc.

Commercial law.—Elementary notions concerning civil law as regards contracts or conventional obligations, sale, drafts. Elements of commercial law. History of industry and commerce in Belgium. Rapid glance at the state of commerce and industry before the Roman domination. Charlemagne. Norman invasion. Influence of the Crusades. The Hansa in Belgium. Markets. Influence of communes. County of Flanders, of Hainaut, Duchy of Brabant, Principality of Liège from 13th to 14th century. The House of Burgundy.

Industrial and Commercial Geography of Belgium.—Study of the nine provinces, nature of soil, principal natural and industrial productions, commerce, roads and railways, remarkable localities.

Rhetoric Class—Commerce.—Recapitulation. Public Funds. Actions and obligations. Methods of repayment of loans. Operations on change. Life assurance and insurance of goods. Ordinary and saving banks. Partnership accounts, speculation, net costs.

Commercial Law.—Law of bankruptcy, etc. Commercial tribunals. Councils of experts. Principal common laws, patents, warrants, trade-marks.

Political Economy.—Production and its factors. Favourable conditions of production (machines, property, liberty to work, division of labour, association, instruction). Exchange and markets. Money. Instruments and institution of credit. Division of Wealth Consumption and saving. Luxury. Taxes. The budget. Population. Elements of theoretical and practical statistics.

History of Commerce and Industry in Belgium from 15th century to the present time.—Aperçu of the development of the most important industries.

Industrial and Commercial Geography of Belgium.—The foreign trade of Belgium. Countries providing principal imports, etc.

20. *General Remarks.*—A review of the whole organisation of Belgian secondary teaching discloses the following features :—

(*a*) The teachers are highly educated, and know their subjects well.

(*b*) They are specialists in their teaching.

(*c*) The organisation of the several divisions in the higher stages of secondary education, is thorough, even if elaborate.

(*d*) The schools are properly equipped for teaching.[1]

The subdivision is one which, as we have seen, is not approved by the Hungarian mind ; but it is of practical value, and endeavours to meet the various needs of the Belgian youth.

The mathematics is excellent, and produces good results. The grade of the work is high.

The curriculum has not been given in great detail, but is probably sufficient to give a sound idea of the state of education in Belgium.

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[1] This the Commissioners know by actual visitation.

CHAPTER XII.

Secondary Education in Denmark.

[G. H. KNIBBS.]

1. *Introduction.*—The Danish system of secondary and higher education has excellent features, some of which are peculiar to itself. The recently-built schools are fine buildings, and well equipped. The educational traditions as to the necessity of thoroughness on the part of the instructors are in keeping with those of surrounding countries, and the influential position which the University of Copenhagen holds in regard to education has had a most salutary influence.

Secondary instruction is given in Gymnasia (*Latinskole*[1]) and "Realschools" (*Realskole*), the former being all but invariably connected with the latter. There are also a number of Realschools without any associated Gymnasium. The schools with the double function are known as Latin and Real schools (*Latin*–og Realskole). In reality there are three divisions, viz., a Greek-Latin, a Latin, and a modern language division.

The Commissioners saw the kind of educational provision made, both in the capital Copenhagen (Kjöbenhavn) and in such minor centres as Fredericia and Frederikshavn, so that the range of provision made was well covered.

Some of the Gymnasia and Realschools are State schools, others again are municipal or communal, and others private schools. Both communal and private schools may receive State subsidies.

2. *Historical Reference.*—The organisation of the Danish system of secondary education was considerably influenced by the systems of Prussia, France, and the smaller German States, in the early part of last century. In about 1836, C. F. Ingerslev made a journey into those countries and published a report, which appeared in 1841. After some experimental adjustments of the then existing régime, made about 1844, a scheme of N. J. Madvig was put into execution. His system involved considerable overburdening, and on all sides vigorous complaints were made. The question came before Parliament in 1860. In 1864 there were some alleviations in individual subjects. Matters remained practically the same till the School Law of 1st April, 1871, introduced the present organisation. This was a compromise between the conservative party and the popular chamber, and accentuated the desirableness of providing a practical education, in which Latin and Greek did not necessarily enter.

The Gymnasium has six classes, the normal age of entrance being the completion of the 11th year.

The information given applies to the date of the Commissioners' visit, and in some instances advantage was taken of information obtained from Denmark subsequently.

3. *Curriculum of Preparatory Schools.*—The curriculum for the various sections of the schools may be illustrated by the programme of the Copenhagen schools (Borgerdydskolen i Kjöbenhavn, 1902), kindly supplied to the Commissioners by Dr. S. L. Tuxen[2] (Skolens Bestyrer), and that of the Oesterbro, Latin, and Realschool kindly supplied by Cand. Mag. Vilh Aagaard[3] (Skolens Bestyrer). There are initially classes practically common to all sections. These are known as "*Fællesklasser*," and the subjects and time devoted to each are shewn in the two following programmes. It may be noted that education commences at 6 or 7 years of age.

Curriculum in the Common Preparatory Classes of Copenhagen Gymnasia and Realschools, 1902.

Subjects.	Classes.						
	I.	II.	III.	IV.	V.	VI.	Totals.
Religion	.....	1	2	2	2	2	9
Danish...	8	7	7	5	3	3	33
Intuitive Instruction[4]	1	2	2	1	.....	.....	6
German	.....	.....	.....	4	3	5	12
French...	.....	.....	.....	.....	5	4	9
History	.....	.....	.....	2	2	2	6
Geography	.....	1	2	2	2	2	9
Natural History	.....	1	2	2	2	2	9
Arithmetic	5	5	4	3	3	3	23
Writing	5	4	3	3	3	2	20
Drawing	.....	.....	.....	.....	2	1	3
Sloyd	2	1	1	1	.....	.....	5
Gymnastics	2	2	2	2	2	3	13
Singing	1	1	1	1	1	1	6
Totals	24	25	26	28	30	30	163

[1] Though called Latin schools, Greek is also taught in them, so that the name is rather misleading.
[2] Meddelser om Skoleaaret, 1901–1902. Kjöbenhavn, 1902.
[3] Meddelser om Österbros Latin–og Realskole i Skoleaaret, 1901–1902.
[4] Forstandsövelse—Instruction and intellectual practice by means of pictures, objects, etc

That

That the preceding programme is not common to all schools is shewn by the following:—

Curriculum in the Common Preparatory Classes in Oesterbro Gymnasium and Realschool, 1901–2.

Subjects.	Classes.						
	I.	II.	III.	IV.	V.	VI.	Totals.
Religion	.....	2	2	2	2	2	10
Danish and Old Norse	8	8	7	6	5	4	38
Intuitive Instruction	1	1	1	.....	.....	.....	3
German	.....	.....	.....	4	5	4	13
French...	.....	.....	.....	.....	.....	5	5
History	.....	.....	2	2	2	2	8
Geography	.....	2	2	2	2	2	10
Natural history	.....	.....	2	2	2	2	8
Arithmetic	6	5	4	4	4	4	27
Writing	5	4	3	3	2	2	19
Sloyd and Drawing	2	2	2	2	2	2	12
Gymnastics	2	2	2	2	3	3	14
Singing	.....	.....	1	1	1	1	4
Totals	24	26	28	30	30	33	171

Other examples might be given, but the above are sufficient as a general indication of the curriculum, and the number of hours devoted to the various subjects.

This scheme of common preparation is analagous to the régime of the Reform Schools in the German scheme of higher education.

4. *Organisation of the Secondary Education proper.*—Some idea has already been given of the Danish system, viz., in the Interim Report, see pp. 69–71, but the real nature of the secondary system was not fully indicated therein.

The first two classes in the secondary school proper are divided into *two* sections, viz., the "Real" section which does not include Latin, and the Classic section, which does include Latin but does not include Greek.

In the Danish system, therefore, the decision as to the taking of Latin is postponed until about 12 years of age is attained.

In the third and fourth classes there are *three* divisions, viz., the "Real" (*real*), the mathematical (*matematisk*), and humanistic or literary (*sproglig*[1]). The first is without Latin or Greek; the second includes Latin, but not Greek; the third both Greek and Latin.

The fifth and sixth classes have only *two* divisions, viz., the mathematical without Latin or Greek, and the literary with both.

The programmes, while similar in different schools, are by no means absolutely identical, as is shewn hereunder:—

Programmes of Classes I and II of the Latin and Real Schools, Denmark, 1901–2.

Subjects.	Copenhagen.				ϕsterbro.				Totals.[2]	
	Real.		Latin.		Real.		Latin.			
	Class I.	Class II.	Class I.	Class II.	Class I.	Class II.	Class I.	Class II.	Real.	Latin.
Religion	2	2	2	2	2	2	2	2	4	4
Danish	3	3	3	3	3	3	2	2	6	6, 5
Latin	...	...	6	7	...	...	5	6	...	13, 11
German	2	2	2	2	3	3	3	3	4, 6	4, 6
French	2	2	2	2	3	3	3	3	2, 3	2, 3
English	4	3	...	1	4	2	...	2	7, 6	1, 2
History	2	2	2	2	2	2	2	2	4	4
Geography	2	2	2	2	2	2	2	2	4	4
Natural History... ...	2	2	2	2	2	2	2	2	4	4
Mathematics	4	4	4	4	3	4	3	4	8, 7	8, 7
Arithmetic	2	2	2	...	2	2	2	1	4	2, 3
Writing	2	2	1	...	1	1	1	...	4, 2	1
Drawing	1	1	1	1	2	2	2	2	2, 4	2, 4
Gymnastics	4	4	4	4	4	4	4	4	8	8
Singing	1	1	1	1	1	...	1	...	2, 1	2, 1
Totals	33	32	34	33	34	33	34	35		
	65		67		67		69			

The tabulated results shew in a moment that the characteristic difference between the "Real" and "Latin" schools is that in the former importance is attached to *English*, while in the latter the subject accentuated is *Latin*.

Programmes

[1] *Sproglig* literally means *linguistic*.

[2] The figures with a comma between shew the different results.

Programmes of Classes III and IV of Latin and Real Schools, Denmark, 1901–2.

Subjects.	Copenhagen.						ϕsterbro.					
	Class III.[1]			Class IV.			Class III.			Class IV.		
	R.	M.	L.	R.	M.	L.	R.	M.	L.	R.	M.	L.
Religion	1	1	1	...	...	...	1	1	1	...	...	...
Danish	2	2	2	4	2	2	3	2	2	3	2	2
History of Literature and Mythology.	1	...	...	...	...	...						
Latin	...	7	7	...	8	8	...	7	7	...	7	7
Greek	...	...	5	..	...	5	...	...	4	...	...	4
German	2	2	2	3	2	2	3	3	3	3	2	2
French	3	3	3	2	2	2	3	3	3	3	3	3
English	3	1	1	3	1	1	3	1	1	3	...	...
History	2	2	2	3	2	2	2	2	2	4	2	2
Geography	2	2	2	2	2	2	2	2	2	2	2	2
Natural History	2	2	2	2	2	2	2	2	2	2	2	2
Mathematics	4	4	4	5	5	5	4	4	4	4	4	4
Geometrical Drawing	1	1	...	1	1	...	...	...	...	...	...	...
Physics	2	2	...	2	2	..	2	2	...	2	2	...
Arithmetic	2	...	...	3	...	...	2	...	...	2	...	...
Writing	1	...	...	...	...	...	...	...	..	...	...	...
Gymnastics	4	4	4	4	4	4	4	4	4	4	4	4
Singing	...	...	...	...	...	...	...	...	...	...	..	...
Totals	32	33	35	34	33	35	31	33	35	32	30	32

[1] R denotes "Real"; M, mathematical; L, linguistic.

The characteristics of the three courses are obvious. Physics and geometrical drawing find no place in the literary section; arithmetic no place in the mathematical or literary section; English is strongly accentuated in the "Real" school, but subordinated in both the mathematical and literary sections.

The literary section gives as much prominence to Latin as the mathematical, and, in addition, takes up Greek.

The programmes hereunder give the "*Studerende Klasser*," the two highest, viz., V and VI. There are only two divisions in these.

Programmes of Classes V and VI of the Latin and Real Schools, Denmark, 1901–2.

Subjects.	Copenhagen.				ϕsterbro.				Totals.	
	Class V.		Class VI.		Class V.		Class VI.			
	M.	L.	M.	L.	M.	L.	M.	L.	M.	L.
Religion	1	1	1	1	1	1	1	1	2	2
Danish	4	4	4	4	4	4	4	4	8	8
History of Literature and Mythology.	1	...	1	...	1	...	1	...	2	0
Latin	...	7	...	7	...	7	...	7	0	14
Greek	...	5	...	5	...	5	...	6	0	10, 11
German	1	1	1	1	...	...	...	...	2, 2	0
French	3	3	4	4	3	3	3	3	7, 6	6, 7
English	2	2	2	2	2	2	2	2	4	4
History	3	3	3	3	4	4	4	4	6, 8	6, 8
Mathematics	8	...	9	...	7	...	7	...	17, 14	0
Geometrical Drawing	1	...	1	...	2	...	2	...	2, 4	0
Physics	5	2	5	3	4	3	6	3	10	5, 6
Gymnastics	4	4	4	4	4	4	4	4	8	8
Singing	1	1	1	1	...	...	...	...	2, 0	2, 0
Totals	34	33	36	35	32	33	34	34		

The characteristics are obvious. The one is a Greek-Latin course, with but little physics; the other is a mathematical course, without—in these final classes—either Greek or Latin, and with about double the amount of physics taken in the literary section.

5. *Details of Curriculum.*—A very succinct indication of the way in which various subjects are taken will, no doubt, suffice.

Religion.—Includes the Lutheran Catechism, Biblical history, and reading from the Scripture.

Danish.—Grammatical use of the mother tongue; reading and explanation of the more important literary works; the Norse mythologies; easy essays for home work. The aim is to acquire an exact and facile habit of speaking. *Old Norse* prose literature is treated and discussed as to grammar, etc.

Latin

Latin (I) commences with an easy reading book, the main elements of the grammar, and the etymology of the language. The authors read are (II, III) Cæsar, de bello Gallico; Cicero, con. Catalinam; selections from Ovid's Metamorphoses; written exercises in translation—Danish into Latin. The Syntax. (IV.) A book of Livy, or Sallust, or Cæsar; Cicero, the Orations; Ovid's Metamorphoses, or a book from the Æneid. Written translations, home work; recapitulation of the grammar. (V and VI.) Livy; Tacitus; Cicero, the Orations, or smaller philosophical treatises; the Dialogues of Seneca. Also, to familiarise with various styles, two books of the Æneid; Horace, the Epistles; selections from the Elegiac writers, or Terence, and so on. The reading is accompanied by the necessary explanations regarding grammar, antiquities, and literary history, etc. Pupils are exercised both in written and oral translation at sight.

Greek.—(III.) Reading book and etymology. (IV.) One book of Anabasis; about 500 verses from Homer. (V and VI.) Herodotus; the Memorabilia; Plato's Apology; Demosthenes' Olynthiacs; Plato; about 3,500 verses from Homer, or Elegiac, or lyric writers, or, more rarely, a tragedy. The necessary syntactical explanations are given, together with such references to antiquities, art, literary history, etc., as are necessary to make the reading properly intelligible.

German.—(I–IV.) Prose and easy poetry; grammar; translations of Danish into German, etc. (V–VI.) More difficult authors, and the necessary grammatical and historico-literary explanations.

French.—Taken on much the same lines as German.

English.—Easy prose and poetry, etc.

History.—(I–IV.) Sketch of Universal history, and the history of Scandinavia in detail. (V–VI.) Ancient history, and the history of Scandinavia; history of the present age.

Geography.—Outlines of physical and political geography; the most important elements of mathematical geography.

Natural History.—(I–IV.) Elements of botany and zoology; importance is attached to direct study of the natural objects. (V–VI.) Mineralogy, etc.

Mathematics.—(I–IV.) Elements of algebra, of planimetry; written problems, etc. (V–VI.) Extension of algebra, stereometry, plane trigonometry; the fundamental principles of analytical geometry and the theory of projections, written exercises. It is customary to make some application of the mathematical knowledge; the students often apply their knowledge in the solution of problems in physics.

Geometrical and other drawing.—In Classes I and II, the drawing is closely associated with mathematics. (III–IV.) Geometrical drawing in the more limited sense. (V–VI.) Projective drawing.

Physics.—(III–IV.) Knowledge of the most important laws of nature. (V–VI.) Continuation of the preceding, the whole founded on experiment; astronomy, with a brief mathematical introduction. This is on the literary side. On the mathematical, chemical and mechanical physics; optics, experimentally treated; astronomy and its mathematical foundations; meteorology.

This is a sufficient indication. It is quite general, and is greatly varied in different schools.

6. *Examinations of Pupils.*—The only examinations to which reference need be made are the examination at the end of Class IV (Hovedeksamen), and the final examinations (*Almindelig Forberedelseseksamen* and *Afgangseksamen for Studerende*). The former is somewhat as follows:—

Danish.—An essay. *German.*—Translation of two works *not* read; prose and poetry; grammar. *French.*—Translation from a work studied; prose at sight; grammar. *Latin.*—Two selections from Cæsar, Livy, Cicero's orations, Ovid's metamorphoses, Latin grammar, written translation of Danish into Latin. *History.*—The work done during the preceding year. Similarly in regard to *Geography* and *Natural History*. *Arithmetic* and *Geometry*, written and oral, *Greek*, *Physics*.

The second examination (Almindelig Forberedelseseksamen) practically began in about 1855, when the Realschools acquired a definite organisation. In 1857 this examination was more precisely fixed, and in 1881 its present form was originated. The minimum age for boys is supposed to be 15, and for girls 17; but this is readily modified. The examination is about as follows:—

Danish.—Oral and written, grammatical and literary examination. *English.*—Prose and poetry, translation at sight; grammar, written translation into Danish. *German.*—Translation at sight of prose; grammar. *French.*—Same as German. *History; Geography; Natural History; Physics; Mathematics.*

This examination, with a pass in three foreign languages, admits to the Polytechnicum, to the Forestry examination, to the postal service. With two foreign languages it admits to the Agricultural school; to the juristic examination of the lower order; to the school of naval architecture, etc.; to certain military examinations; to the examinations for dentistry, pharmacists; to the railroad service.

The *Afgangseksamen* is as follows:—

(I) For both sections: *Danish*, with the history of its literature, including old Norse, two essays. *French*, with translations from Danish into French, and translations into Danish of selections of two works not read. *German.*—Translations at sight into Danish of difficult prose, translation of poetry; grammar. Or *English.*—Translations at sight of prose, written translations, grammar. *History.*

The following are special to the literary section:—

Latin.—Translation of prose and poetry; translation of prose at sight.
Greek.—Translation of prose and poetry. Physics and astronomy.

To the mathematical section specially belong mathematics, four written exercises, physics.

The

The "*Afgangseksamen*" on the literary side qualifies for study in the University; and on the mathematical side for the courses in the polytechnica, and also for the University courses, excepting theology and law. The University, however, holds a special examination in Latin and Greek for those who pass only in the mathematical side. This is a method intermediate between the English and the German.

7. *The Teaching Staff.*—At the head of every school there is a Rector (Rektor[1]) or Principal (Bestyrer), whose functions are practically identical with those of the Directors in German schools. The other grades in the teaching staff are the higher teacher (Overlærer[1]), ordinary teacher (Adjunkt), special teachers, and assistants. "Adjunct" teachers must have served at least one probationary year before being qualified for office.

Rectors are required to give fifteen hours' instruction weekly, other teachers about twenty-four hours weekly, on the average.

The salaries of special teachers, adjuncts, higher teachers, and rectors are in the ratio of 3, 3, 5, and 7. The salary of each may increase up to the commencing salary of the next higher grade. The increases of salary are quinquennial for the Rector and *Overlærer*, and triennial for the others, the amount of increase being 10 per cent.

The pension system is one in which the scale increases with years, reaching a maximum at 70 years of age, when it is about two-thirds of the salary.

For safeguarding their families from want, teachers are required to insure in the State institution for life assurance.

8. *Examinations for Teachers.*—The only examination to be passed formerly was a philologico-historical teachers' examination. This was, through Madvig's influence, organised so as to embrace Latin, Greek, history, the history of the Old Norse and Danish tongue, and the history of Danish literature. This examination was intended exclusively as a qualification for the position of "*Rektor*" or "*Overlærer.*" At that time there was no special examination for the "*Adjunkt.*" In 1883 the old examination was abolished and a series of examinations substituted in lieu, embracing the following subjects:—Danish, Latin, Greek, German, French, English, history, natural history with geography, mathematics, physics. The scheme of qualification is to take a principal subject and subordinate subjects; these, however, must be in some sense correlative. For example, natural history and geography can be taken as the chief subject, and chemistry and physics as subordinate subjects; either Latin or Greek as principal subject, require the other as subordinate subject; French and history demand as subordinate Latin, and so on. These options are defined. Rectors and masters must unconditionally possess such qualifications, and assistants must, as a matter of fact, possess them also. The examinations are held twice a year, the commission consisting of University professors and directors.

For the principal subject, 8 marks is the maximum, 4 being given for written work done under supervision, and 4 for the remaining part; for each subordinate subject, 4 marks are given, 2 being for the written work under supervision. An average of $3\frac{1}{2}$ is necessary to pass; 6 is a first-class pass "*laudabilis*;" $7\frac{1}{2}$ is "*laudabilis et quidem egregie.*"

The Danish secondary teachers attend lectures in Pædagogy for at least a semester ($\frac{1}{2}$-year) at the University, and to be employed in a State secondary school they must have spent two years in a higher school. Part of the time is spent as auditor, part in teaching under the supervision of the ordinary teacher of the subject, part in actual teaching.

Till recently even the Director of communal and private schools was not bound to pass any examination. That has been altered since 1890. No private gymnasium can be established except by permission of the Instruction Department (*Ministeriet for Kirke- og Undervisningvæsenets*), its programme and school buildings must be approved, and its Director must have passed the necessary secondary teacher's examination, and have taught for five years in a gymnasium.

9. *Inspection.*—Both public and private gymnasia and "Real schools" must submit to inspection. The inspectors are appointed triennially by the "*Ministeriet*"; they are professors in the University; and are various in qualification (for example, the inspecting body may consist of a professor of philology, a professor of the modern history of literature, a professor of mathematics, and so on). They occasionally inspect the teaching; they influence the scheme of instruction, and are concerned in the final examination schemes.

For singing and gymnastics, there is a special inspection.

10. *Physical Culture.*—Physical exercises embrace both free exercises and exercises with apparatus; in summer, swimming. In the State gymnasia there is rifle practice in the four highest classes. Cricket, rowing, dancing, and manual training are optional features in many gymnasia. It may be mentioned that not only is the gymnastic excellent, but the qualifications of those in charge of the physical culture of the young people are high. ***They are scientifically educated, and are not mere gymnasts.***

11. *General Conclusions.*—The above very brief sketch gives no adequate conception of Danish secondary education. Although three Danish towns were visited by the Commissioners, it would be idle to pretend that any sufficient study was made of their educational system. There was much that impressed the Commissioners very favourably, and in the higher institutions (*e.g.*, the Polytechnicum and University) it was obvious that the Danish student is well equipped. On the whole, the equipments were not quite so munificent as in some other parts of Europe, but very rapid progress is being made.

The system does not call for special comment here.

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[1] In the State establishments, the Rector is Rank IV, No. 3; the Overlærer, Rank V, No. 3.

CHAPTER XIII.

CHAPTER XIII.

Organisation of Secondary Education in France.

General Administration.

[G. H. KNIBBS.]

1. *Introduction.*—The fundamental lines of the present organisation of Public Instruction in France were laid down by the National Convention, and developed and practically completed by the Government of Napoleon I. From time to time its details have since received the closest attention on the part of the French Government, with a view to maintaining a well-defined aim that shall remain continuously in touch with educational progress, and have accordingly been modified.

The historical details do not call for special comment. It is, perhaps, sufficient to observe that the beginning, the middle, and the close of last century were the most critical periods in the account of the development and consolidation of the present organisation.

2. *General Outline of Administrative Organisation.*[1]—At the head of the French Administration of Public Instruction stands the Minister.[2] The Central Administration of the "Ministry of Public Instruction and Fine Arts" comprises, independently of the Cabinet of the Minister, the direction of secondary education. (*See* Art. 1.)

This direction and administration is carried on through four bureaux, charged with the following matters :—

1° *Bureau* (*a*)—Plans of study, programmes, and discipline in connection with public secondary education; (*b*) Private (*Libre*) secondary education; (*c*) Academic inspection as regards secondary education; (*d*) Scholarships.
2° *Bureau.*—Personnel of boys' lyceums and colleges.
3° *Bureau* (a)—Expenditure and accounts in connection with boys' lyceums; (*b*) Buildings.
4° *Bureau* (*a*)—Secondary education of girls; (*b*) Expenditure and accounts of girls' lyceums and colleges; and (*c*) of boys' colleges.

This subdivision of work, there is every reason to believe, is satisfactory, though the reason of the arrangement is by no means quite obvious.

3.—*The Higher Council of Public Instruction.*—The Minister of Public Instruction, who, personally, is not necessarily a pædagogic expert, has the advice of a "Higher Council of Public Instruction" (*Conseil supérieur de l'instruction publique*), which is constituted as follows[3] :—

(1) The Minister (President).
(2) Five members of the Institute, elected by the Institute and General Assembly, one being from each of its five classes.
(3) Nine Councillors named by a decree of the President of the Republic in Council, upon the recommendation of the Minister of Public Instruction, and selected from among the Directors and former Directors of the Ministry of Public Instruction, the General-Inspectors and former General-Inspectors, the present and former Rectors, the present and former Academy-Inspectors, the present and former teachers in Public Education.
(4) Two lecturers of the "*Collège de France,*" elected by their colleagues.
(5) A lecturer of the Museum, elected by his colleagues.
(6) A professor in the faculties of Protestant theology, elected by the professors, etc.
(7) Two professors of the faculty of law, elected by ballot, by the professors, "*agrégés,*" etc.
(8) Two professors in the faculty of medicine, or of the mixed faculties, elected by ballot, by the professors, etc.
(9) A professor of the higher schools of pharmacy, or of the mixed faculties, elected in the same way.[4]
(10) Two professors in the faculty of science, elected by ballot, etc.
(11) Two professors in the faculty of literature, similarly elected.
(12) Two delegates of the "*Ecole normale supérieure,*" one for literature, the other for science, elected by the director, sub-director, and lecturers, etc., from among themselves.
(13) A lecturer of the "*Ecole nationale des chartes,*" elected from their own number by the members of the "*conseil de perfectionnement*" and the lecturers.
(14) A professor of the School of Modern Oriental languages, elected by his colleagues.

(15)

[1] Some idea of the Primary school system of France is given in Chaps. VIII–X of the Commissioners' Interim Report, pp. 86–105. The account is by Mr. J. W. Turner.
[2] Décret Art. 1*er* (26th Nov., 1897).
[3] Loi relative au conseil supérieur de l'instruction publique et aux conseils académiques. Art 1*er*, 27 février, 1880.
[4] In the mixed faculties the professors of medical subjects vote for two professors of medicine, and the professors of pharmaceutical subjects vote for a professor of pharmacy.

(15) A delegate from the "*Ecole Polytechnique*," elected by the commandant, the second commandant, the members of the "*Conseil de Perfectionnement*," the director of studies, the examiners, lecturers, etc., of the school, and selected from their own number.

(16) A delegate from the "School of Fine Arts," elected by the director and lecturers of the school from among themselves.

(17) A delegate from the "*Conservatoire des Arts et Métiers*," elected by the director, sub director, and lecturers, from their own number.

(18) A delegate of the "*Ecole centrale des Arts et Manufactures*," elected by the director and lecturers, from themselves.

(19) A delegate of the "*Institut Agronomique*," similarly elected.

(20) Eight *agrégés* (active) of each of the orders of fellowship ("*agrégation*"), viz , grammar, literature, philosophy, history, mathematics, physical or natural science, modern languages, special education, elected by the whole of the "*agrégés*" of the same order who are active lecturers, etc., in the lyceums.

(21) Two delegates of the communal colleges, one from representatives of literature, the other from those of science, elected by the principals and active lecturers in the colleges.

(22) Six representatives of primary education, elected by ballot by the general inspectors of primary instruction, by the director of primary education of the Seine, the academy inspectors of the several departments (districts), the primary inspectors, the directors and directresses of the normal Primary Schools, the general inspectresses, and the special delegates charged with the inspection of asylums.

(23) Four representatives of private education, nominated by the President of the Republic, on the recommendation of the Minister.

It will be at once recognised that a council so constituted is thoroughly competent to advise the Minister, and that, while the representatives of primary education are not omitted, their place is appropriately subordinated. The council, as thus constituted, is as follows :—

(i) Minister	1
(ii) Representatives of higher education	46
(iii) Representatives of primary education	6
(iv) Representatives of private education	4
Total	57

All the members of the Council are nominated for four years. Their powers, however, may be indefinitely renewed (Art. 2).

The nine members nominated as councillors by the President's decree, and the six councillors indicated by the Minister, constitute a *permanent section* (Art. 3), having the following functions (Art. 4) :—

(*a*) To study the programmes and regulations before they are submitted for the opinion of the "*Conseil supérieur.*"

(*b*) To advise as to the creation of faculties, lyceums, colleges, primary normal schools.

(*c*) To advise as to the creation, changing, or suppression of chairs.

(*d*) To advise concerning the class, library, and prize books which should be interdicted in the public schools.

(*e*) To advise concerning all questions relating to the courses of study, the administration, the discipline, or the length of curriculum, etc., which may be remitted to them by the Minister.

(Art. 6) :—The Council itself advises as to—

(*f*) Programmes, methods of teaching, modes of examining, administrative and disciplinary regulations relative to public schools, which the permanent section have previously studied.

(*g*) Regulations concerning examination and comparison of degrees.

(*h*) Regulations concerning the supervision of private schools (*écoles libres*).

(*i*) Books for teaching, reading, or for prizes, which ought to be prohibited in private schools, as contrary to morals, to the Constitution, and to the law.

(*j*) Regulations relating to applications from foreigners to be authorised to teach, to work, or to direct a school.

The Higher Council deals with appeals, and in the last resort, with the reports furnished by the academic councils as to contentious and disciplinary matters. Whenever they deal with matters concerning the dismissal, retirement, or suspension of professors of public teaching, or with matters concerning the prohibition of the right to teach or the right to direct a teaching establishment, either public or private, the Council's decision shall depend upon a two-thirds majority (Art. 8). This Council meets in general assembly twice a year, but the Minister may convene an extraordinary meeting at any time.

It will be recognised that the efficiency of the secondary education depends very largely upon the Higher Council, and that, liberally constituted as it is of highly-educated men, it is likely to ensure efficiency in the educational machinery. Such a council is able to take a liberal and cultured view of the educational questions that continually arise for settlement, and that is the secret of its efficiency.

4. *Machinery of Secondary Education.*—As already indicated, secondary education is given in lyceums (*lycées*)[1] and in communal colleges (*colléges communaux*)[2]. In order to secure efficient administration, the whole

[1] Loi du 11 floréal an X, Arrêté, 19 frimaire an XI, Loi Art. 71 et 72, § 1, 73 (15 Mars, 1850).
[2] Loi relative à l'enseignement, Art. 72, § 2, 74, 75 (15 Mars, 1850).

whole territory is divided into educational districts known as academies (*académies*),[1] or academic districts (*circonscriptions académiques*)[3], the chief officer of which is known as a rector (*recteur*).[2] The rectors are assisted by the academy inspectors (*inspecteurs d'académie*).[3]

Above all these, however, are the Inspectors General (*inspecteurs généraux*). Originally these were three in number (by the Loi, 11 floréal, an X). By the decree of 9th March, 1852, the number was increased to six, viz., three for literature and three for science, and they were charged with the inspection of the national lyceum, the communal colleges, and the most important of the private establishments for secondary education. Two more Inspectors General were added to these by the decree of 12th February, 1862, and this number (eight) was increased to ten by the decree of 13th January, 1879. Further creations are General Inspectors of modern languages (*inspecteurs généraux des langues vivantes*); two were created in 1874 under the Law of 29th December, 1873, and an "*Inspecteur de l'économat*" was made under the Law of 8th August, 1885, and a second under the Law of 30th March, 1888.

A Consultative Committee for Public Instruction (Comité consultatif de l'enseignement public) was reconstituted by the decree of 11th May, 1880, this Committee having three sections corresponding to the three orders of education, viz, superior, secondary, and primary. The *section for secondary education* consists of the Inspectors-General of Secondary Education, the Inspectors General of Modern Languages, the Vice-Rector of the Academy of Paris, and the Director of the "*Ecole normale supérieure.*" Each section has for its secretary a Chief of the Bureau of Central Administration. By the decree of 15th December, 1888, the rectors of the academies may, by the decision of the Minister, be called upon to sit in the Consultative Committee, with a deliberative vote therein. This secondary education section is charged with the discussions of all questions submitted to them by the Minister concerning personnel and promotions.

5. *The Academic Districts.*—The "*Circonscriptions académiques,*" referred to in the previous section, were sixteen in number by the Law of 14th June, 1854, their centres being Aix, Besançon, Bordeaux, Caen, Clermont, Dijon, Douai, Grenoble, Lyon, Montpellier, Nancy, Paris, Poitiers, Rennes, Strasbourg and Toulouse. To these was added another departement, viz., "Savoie et la Haute-Savoie," the centre being at Chambéry, by the decree of 13th June, 1860; and yet again Algeria was added by the decree of 15th August, 1875. The rector charged with the administration of each academy has under him as many academy inspectors as there are "*départments*" in his district (*circonscription*). They, the rectors, must possess the degree of doctor, and are appointed by the President of the Republic upon the recommendation of the Minister of Public Instruction. They are charged with the supervision and direction of public establishments for secondary education, the supervision of private secondary education, and the receipt of reports from the lyceums and the communal colleges. They see that the private institutions for secondary education are inspected at least once a year, and submit to the Minister résumés of their reports of inspection.

6. *The Academy Inspectors.*—The functions of the "*inspecteur d'académie*" are incompatible with any remunerated public office.[4] The inspectors are appointed by the Minister, that office being delegated by the President of the Republic.[5] They correspond with the rector as regards all that concerns public or private secondary education, and in his absence preside at the Administrative Bureau, near the lyceums and communal colleges. There are as many as eight inspectors for the "Academy" of Paris. By the rector's authority two are attached to literary and scientific teaching of the lyceums and colleges of the City of Paris, and one is charged with matters touching private secondary education.[6]

7. *Academic Councils.*—Analogous to the "*Conseil supérieur*" of the Central Administration is the "*Conseil académique*" of the local centre of administration (Loi 27, Février, 1880). The latter consists of the following individuals, see Art. 9 :—

(1) The Rector (President).
(2) The Academy Inspectors.
(3) The Deans of the Faculty of Protestant Theology, Law, Medicine, Science, and Letters, the Directors of the Higher State Schools of Pharmacy; the Directors of Schools of Medicine and Pharmacy; the Directors of Preparatory Schools for the Higher Teaching of Science and Literature.
(4) The Professor of each of the faculties of Higher Schools of Pharmacy, elected by the professors, etc., of the schools.
(5) The Professor of the Preparatory Schools of Medicine and of Pharmacy, similarly elected.
(6) A Professor of the Preparatory Schools for Higher Teaching of Science and Letters, also similarly elected.
(7) The President and Principal of one of the Communal Lyceums and Colleges, nominated by the Minister.
(8) Two Lecturers in Science, elected by ballot.
(9) Two Lecturers in Literature, similarly elected.
(10) Two Lecturers of the Communal Colleges provided with the degree of licencié, one in literature and the other in science, elected by the whole of the teaching-staff of similar or higher grade.
(11) Two members elected by the Minister in the General Councils and Municipal Councils which contribute to the cost of superior or secondary education in the district.

The members of the Academic Council, either nominated by the Minister or elected, hold office for four years; their office may be renewed. (Loi, 27 Février 1880, Art. 10). This Council advises as to regulations concerning the communal colleges, the lyceums, the votes, and the cost of administration of these establishments,

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[1] Loi Art 1, 2, 9, § 2 (14 Juin, 1854).
[2] Art 1er (9 Mars, 1852): Art 1er, 15, 16, 17, 19, 20, 22 et 30 (22 Août, 1854).
[3] Décret relatif à l'inspection. Art. 36 (29 Juillet, 1850). Loi Art. 9, § 2 (14 Juin, 1854). Décret Art. 3 (9 Mars, 1852). Décret, Art. 22, § 1, Art. 30 (22 Août, 1854).
[4] Décret, 29 Juillet, 1850.
[5] Décret, 9 Mars, 1852.
[6] Décret, 22 Août, 1854.

establishments, and upon all such questions touching their administration and discipline as are remitted to them by the Minister. A report upon the condition of the establishments for public education, secondary or superior, and upon improvements which seem desirable, is addressed *each year* to the Minister. The Council is charged by the Minister or Rector with all contentious or disciplinary matters relating to secondary or higher instruction, public or private ; it instructs and declares, without reference to the *Conseil supérieur*, the decisions and penalties to apply.

Members of the teaching staff for public or private education, arraigned before the Academic Council or before the Superior Council, have the right to become acquainted with the "*dossier*" so as to be able to defend themselves, or to make their defence by word of mouth, or by means of written memoranda.

For the contentious or disciplinary affairs concerning the members of private education, superior or secondary, two members of private education, nominated by the Minister, are added to the Academic Council (Art. 11).

The Academic Council meets twice a year in ordinary session, but may be convened at any time by the Minister. (Art. 12).

Independently of the disciplinary power governed by Articles 7 and 11, the Minister may reprimand any member of the public teaching staff before the Academic Council, or censure him before the higher council. Such actions of the Minister are without recourse. (Art. 13.) He is equally authorised, as regards a professor of higher education, to reduce his rank, upon the advice of the higher Council, and as regards a secondary teacher, after having had the advice of the permanent section. (Art. 14.)

The Minister may suspend for any time not greater than a year without loss of salary. Suspension for a longer period, with total or partial loss of salary, may be pronounced only by the Academic Council or, on appeal, by the higher Council. (Art. 15).

8 *Lyceums and Communal Colleges.*—By the law of the 15th March, 1850, the Lyceums and Communal Colleges—*i.e.*, the establishments for secondary education—may have annexes for boarding pupils (*pensionnats*). (Art. 71.) The difference between the two institutions is defined under the decree of 25th February, 1860. Establishments for secondary instruction, founded, maintained, and directed by the State, may alone bear the name lyceum (*lycée*). (Art. 1). Establishments of the same nature, founded and maintained by the Communes, but under the supervision and direction of the State, are known as colleges (*collèges*). (Art. 1). Private institutions are not permitted to so name their establishments. (Art. 2.) Notwithstanding this, the Minister of Public Instruction may, upon the advice of the "Imperial" Council, confer the title of "private college" (*collège libre*) upon any of these institutions. Ancient communal colleges that have been transformed into private establishments, properly authorised to receive subsidies or concessions of buildings from the towns, and also establishments which, before the law of 15th March, 1850, bore the title of college, may receive such honorary titles.

The lyceums are founded and maintained by the State, with the co-operation of the "*départements*" and of the towns. (Art. 72.) Every town in which the municipal council desires to raise the communal college to the rank of a lyceum must provide the cost of construction and the appropriation necessary for that end, must supply the necessary furniture and collections for teaching, and must assure the maintenance and repairs of the buildings. (Art. 73.)

Cities that wish to establish a place of residence for the pupils (*internat*) near a lyceum must equip and furnish it, and found a number of scholarships for ten years, with or without the assistance of the "*département*," the number being fixed at the pleasure of the Minister. At the expiration of ten years the towns and *départements* are free to suppress the scholarships, excepting so far as the bursars have acquired rights in the enjoyment of their bursaries. Where the State wishes to preserve the pupils' residence (*pensionnat*), the locale and the furniture must remain at its disposal, and will be returned to the Commune only on the suppression of this establishment. (Art. 73.)

9. *Bureau of Administration for Lyceums.*—By the law of 20th January, 1886, every national lyceum in the "*départements*" has a bureau of administration, constituted as follows :—

The Academy Inspector, the Prefect and Under-Prefect, the "*Maire*," the Principal. These are *ex officio* members, and beside them are six members nominated for three years by the Minister, upon the recommendation of the Rector, based upon the advice of the Prefect. Three of these members are elected from among the Municipal Councillors of the town in which the lyceum exists, and their powers determine with those of the Council of which they form part. The secretary is appointed by the bureau itself. The rector is president *ex officio* of the bureau of administration for all the lyceums in his academic province. In the absence of the Rector, the presidency devolves upon the academy inspector ; nevertheless, whenever the Prefect shall personally assist at the sitting, he shall preside. The Prefect, being a member, *ex officio*, of the bureau of administration of all the lyceums situated in his "*département*," may be represented in the bureau of the lyceum at the chief centre by a councillor of the prefecture. In the case of equal voting the President has a casting vote. (Art. 1.)

The administrative bureau supervises and controls the material administration of the lyceums ; it ascertains by its delegates, and conformably to the provisions of Article 6, whether the general management of the lyceum is regularly authorised, whether the house is kept with that care which the well-being of the pupils demands, whether the regulations concerning hygiene and diet are scrupulously observed, whether the whole of the furniture is maintained in good condition and submitted to thorough control.

One or two members of the bureau, delegated by the Rector, collaborate with the Academy Inspector in making an inventory of the material that exists in the store rooms of the lyceum, and in reporting in regard thereto. The result of the inquiry is recorded with all necessary details, on the "*procès-verbal*" of the inventory.

The physician of the lyceum should attend the séances of the bureau in his consultative character, when questions are being considered where his professional opinion might be judged useful. (Art. 2.)

The bureau of administration examines the draft of the budget prepared by the Principal, and defines its proposals ; the report and deliberation are transmitted to the Rector with the draft of the budget. It expresses its views as regards the feasibility and utility of all demands for supplementary and extraordinary credits concerning the general management or material of the establishment, so also concerning works of construction and repair. These matters are introduced by the Principal, after authorisation by the Rector.

He verifies the administrative accounts and all expenses which relate thereto, and expresses in a report his opinion as to the account itself, as to the result of the Principal's administration, and as to the management of the steward (économe) during the past year. In this connection he mentions expressly all the improvements which he judges worthy of introduction in the material service. After the examination of the administration of accounts, the bureau enters upon its deliberations. The principal then ceases to attend the sitting.

The bureau of administration discusses such schemes of purchase, proposed by the principal, as are to be submitted to the approval of the Academic Council. With the consent of the Rector, he may define the conditions of contract and the clauses and terms of the purchases of every kind. (Art. 3.)

Questions regarding studies, internal discipline, and personnel are not within the province of the bureau of administration. (Art. 4.)

The bureau assembles at least once every three months. It is, besides, convened by the President every time the business of the service requires it. The meetings take place in the record-room of the lyceum. Minutes (*procès-verbal*) of the sittings are kept in the special register, which is placed at the side of, and signed by, the rector or the inspector of the academy. This remains in the establishment. The presence of six members at least is necessary to give validity to the deliberations of the bureau. (Art. 5.)

In the quarterly sittings the bureau appoints the delegates who are, at least once a month, to visit the lyceum, accompanied by the Inspector of the Academy or the Principal. He is to give an account, at each sitting, of the visits paid since the preceding sitting. The remarks of the delegates and the discussion which may arise therefrom are recorded in the minutes. A copy of these is addressed to the Rector, who sends it, if necessary, to the Minister, with his observations. (Art. 6.)

For the whole of the lyceums of the "departement" of the Seine, the powers of the bureau of administration are exercised by an administrative commission, the vice-Rector presiding, in conformity with the convention agreed to by the Minister of Public Instruction and the town of Paris, on the 12th and 31st December, 1884. (Art. 7.)

10. *Communal Colleges.*—The communal colleges were founded and maintained by the communes by the law of 15th March, 1850. They may be subsidised by the State. (Art. 72.) To establish a communal college, every town must conform to the following conditions, viz., it must—

(1.) Supply land suitable for this purpose and guarantee to keep it in order.

(2.) Place and maintain on this land a building suitable for the course of instruction, and also for the "pensionnat" if it be intended that the establishment shall receive boarding-pupils

(3.) Guarantee for five years at least a fixed salary for the principal and masters. This will be considered as obligatory expenditure on the part of the commune in the event of an insufficiency in the college revenues of the fees paid by the day-scholars and by the boarders.

At the termination of two years, the towns which have established communal colleges outside these conditions will be expected to conform to them. (Art. 74.)

The object and range of the teaching in each communal college will be determined, as far as the needs of the locality are concerned, by the Minister of Public Instruction, in the higher Council, on the proposition of the municipal council and the advice of the Academic Council. (Art. 75.)

11. *Bureau of Administration for Communal Colleges.*—By the law of 20th January, 1886, every communal must have a bureau of administration. This is composed as hereunder explained.

The Academy Inspector is president, and member *ex officio;* the Prefect or the sub-prefect, the "*Maire*," the Principal, are also *ex officio* members. Four members are nominated for three years by the Minister, on the representation of the Rector and with the advice of the Prefect. Two of these members are chosen from among the municipal councillors of the town where the college is situated; their powers cease with those of the Council of which they form a part. The Rector is president, *ex officio*, of the bureaux of administration of all the communal colleges situated within his district. The secretary is appointed by the bureau. At the head-quarters of the prefecture the Prefect may be represented by a delegate; when the latter attends personally at the sitting, the presidency, in the absence of the Rector, falls to him.

In the head-quarters of the sub-Prefecture, the bureau is presided over by the sub-Prefect, in the absence of the Academy-Inspector, who, however, cannot be represented by a delegate. In the absence of the Inspector and of the sub-Prefect, the "*Maire*" presides.

In the towns which are not the head-quarters of the "*département*" or district, the "*Maire*" presides over the bureau in the absence of the Academy-Inspector. The presence of five members at least is necessary to give validity to the deliberations of the bureau. The president has the casting-vote in the event of an equal division. (Art. 8.)

The administrative bureau supervises and controls the material administration of the colleges; it ascertains by its delegates, and conformably to Art. 13, whether the general management is regularly organised, whether the house is kept with all care for the well-being of the scholars, whether the regulations concerning hygiene and the diet are scrupulously observed, and whether the furniture of every kind is maintained in good order and submitted to proper control.

The physician, in his consultative capacity, of the college shall be called to the sittings of the bureau for the consideration of those questions where his professional knowledge will be judged useful. (Art. 9.) The bureau expresses its opinion upon the feasibility and utility of the outlays for the maintaining and improvement of the academic and scientific building, upon the works of construction and repair, and upon the creation of new professorships. It examines the draft of the budget and gives its advice upon the distribution of funds accorded by the town for the maintenance of the college. The administrative account of these receipts and expenses is also submitted each year. Effect can be given to the deliberations of the administrative bureau only after the approval of the Minister, on the recommendation of the Rector. (Art. 10.)

Questions relating to studies, internal discipline, and personnel are not within the province of the administrative bureau.

The

The bureau meets once every three months. It may also be convened by the Academy-Inspector when the exigencies of business require it. The meetings take place at the college or, in default of a suitable place, in one of the rooms of the town-hall. Minutes of the sittings are entered into a special register, which is retained and signed by the Academy-Inspector and kept in the establishment. (Art. 12.)

At the quarterly sittings the bureau appoints delegates who should, at least once a month, visit the College, accompanied by the Inspector of the Academy or by the Principal.

He has to give an account, at each sitting, of the visits made since the preceding session. The remarks of the delegates and the discussion to which they give rise should be recorded in the minutes. A copy of the minutes is addressed to the rector, who transmits it, if need be, to the Minister with his observations. (Art. 13.)

12. *General Remarks on the Scheme of Administration.*—The organisation of the machinery of public secondary education is elaborate but nevertheless excellent. It maintains a sufficiently wide interest in the machinery of education, and since all men who are on its councils of advice are *educated men in responsible positions*, it has the essential features of success. A point worthy of note is that the administrative bureau cannot interfere with the programme of studies, with the internal discipline, or with the personnel. *Competent jurisdiction* is a matter of importance, and the administrative bureau, *as such*, is not deemed competent, notwithstanding the fact that some members therein might be regarded as ideally qualified to belong to committees for adjudicating on the question of studies, discipline, and personnel. This element is one worthy of greater attention in this State, for the competent constitution of the boards who have to define and control the details of public education is very far-reaching in its consequences.

CHAPTER XIV.

Organisation of Secondary Education in France.

The Teaching Staff, Etc.

[G. H. KNIBBS.]

1. *Introduction.*—Perfection in the mechanism of an educational system realises its object only when the personnel is also satisfactory. A good teaching-staff may give education of high value, notwithstanding great limitations of equipment and of material advantages, but with a professionally indifferent staff no mechanism can make the system of value. In discussing education in other parts of the world, and comparing it with that in this State, it is essential, therefore, to take some account of the professional qualifications of the teaching-staff. Highly educated and earnest teachers can alone make good education possible, and the system of any country is likely to be good only in so far as it pays attention to this fundamental element.

In the following sketch the endeavour is made to disclose the organisation of the teaching-staff charged with secondary education in France; their educational and professional equipment for their various offices will be briefly indicated herein and more fully dealt with in the following chapter.

It is important to bear in mind the character of the qualification of the *primary* teacher as one element in the standard of comparison. In Chapter XXXV of the Interim Report of the Commissioners (pp. 331–337) a fairly complete translation of the official "Plan of Studies and Teaching Programme" has been given. From that it will be seen how excellent is the provision made in France for professionally equipping the teacher of the primary school.

A careful study of the chapter referred to will shew more than that, however. It will reveal the fact that, if we except the subjects of mathematics and the classic languages, the preparation of the primary teacher is in many respects better than that of the secondary teacher in this State. This is one of the facts that it is necessary to fairly face, and any attempt to disguise the truth would be a betrayal of the interests of the people.

If the scheme of qualifying the primary teacher is, relatively to our own, so excellent, and if, as will be seen, the secondary teacher is relatively still more highly qualified, then it follows that the need for progress touches all the planes of education; for the University is based upon the results of the secondary system, and its opportunities are limited first by the character of the primary system, and secondly by that of the secondary system, based thereon.

With these weighty facts before our minds, it behoves us to set aside all regard for that species of *amour propre* which tends to blind us to the true state of the case.

In the following sketch a brief description is given of the several functionaries of the French secondary schools.

2. *The Principal.*—By the French laws, at the end of the eighteenth and the beginning of last century, the administration of every lyceum devolved upon the "Principal" (*proviseur*), who had immediately under him a "proctor" (*censeur des études*) and a "procurator" (*procureur*) managed in detail the affairs of the school. The principal, proctor, and procurator were originally nominated by the "First Consul" (11 Floréal X, Art. 13, 14). All functionaries in the secondary school are subordinate to the "Principal" (see regulation, 19th September, 1809, Art. 2), and (by the statute of 4th September, 1821, Arts. 4–11, 59) he is held responsible for the good administration of the college; is to exercise a general supervision in regard to religion, manners, and the scheme of study; is to direct the whole economical management of the college; and is to notify, and cause to be carried out, all ordinances, judgments, regulations, and decisions that have reference to the college. With the Proctor the Principal attends from time to time at the lessons given by the different masters; he visits the class-rooms; he notices any serious contravention of the regulations or traditions such as would imply negligence on the part of any of the functionaries, and if necessary he notifies the Proctor. The latter is charged with remedying all matters so brought under his notice; he examines every morning the journal of each class with the inscribed notes of the different functionaries therein. These journals are every evening remitted to the Principal by the Proctor. After an examination of them he sends for such pupils as he thinks require to be subjected to remonstrance or exhortation, and once a week he appears with the Proctor at each class, for the announcement of the *résumé* of the notes during the week. Once, also, each three months he transmits to parents a report concerning the conduct, progress, bearing, and state of health of their children. It is required that he shall always be solicitous, particularly in regard to the school hospital, and to make daily at least one visit thereto with the surgeon. The Principals and Proctors of the colleges must be licentiates (*licenciés*) either in the faculty of sciences or in that of letters. (Ordinance of 26th March, 1829.)

3. *The Proctors (Censeurs).*—The proctor[1] superintends the conduct, manners, work, and observes the progress of the pupils. (Art. 13.) The masters (*maitres d'études*) are subordinate to him. He reports daily to the Principal the state of the lyceum; he supervises the entry and departure of all the day-scholars; examines all books, drawings, and engravings which are brought into the lyceum, removing all that he deems dangerous as regard their morals, etc. While subordinate to the Principal, the Proctor is higher than all other functionaries of the college. He is charged with the supervision of the library (Regulation of 19th September, 1809, Arts. 10–12) and of all collections of a scientific character (Statute of 4th September, 1821, Arts. 13–17). Proctors are selected from among the "*agrégés*," or from among the licentiates who have the title of "academy officer," having fulfilled for five years the duties of a "*chargé de cours*" in the lyceum, or have had the general supervision under ministerial nomination, or have been principals of colleges.

4. *Chaplains (Aumôniers).*—Every lyceum is supposed to have its chaplain (Order dated 19 frimaire an XI Art. 28). Originally he was nominated by the head-master and approved as chaplain by the bishop (Regulation 19th September, 1809, Art. 32). By the Statute of 4th September, 1821, however, it is directed that after consulting the diocesan bishop, he shall be nominated on the recommendation of the Principal and the advice of the Rector and shall be charged with instructing the pupils in religion, with celebrating the divine office in the college chapel, and with preparing pupils for their confirmation and first Communion (Arts. 18–24). By a circular, dated 12th November, 1835, Protestant or Jewish clergy are also empowered to give religious instruction to pupils of their own faith; they receive a salary when the number of pupils exceeds ten.

The whole matter requires no particular comment, except that the *secondary education is not essentially secular, but neither is there ecclesiastical control.* The ecclesiastical influence is not as great as in English secondary schools, where the Principal is generally a clergyman.

5. *Lyceum-Professors.*—By the decree of 10th April, 1852, it was necessary that a professor should be an *agrégé* by public examination (Art. 6), and by the decree of 28th March, 1866, the professors (professeurs titulaires) of "special secondary teaching" in lyceums are to be drawn exclusively from the "*agrégés*" of special or ordinary secondary teaching. The titular professors, the divisional professors (*professeurs divisionaires*) the "*chargés de cours*," and the elementary masters connected with lyceums devoted to secondary-classic teaching, could be required moreover to take part in the special teaching, so far as the number of hours of service which the regulations require of them indicate (Arts. 3, 5). *Agrégés* employed in the lyceums have the provisory title of professor, but no one can be nominated a titular professor before he is 25 years of age and can shew five years of service in the public teaching (decree of 26th November, 1875, Art. 1).

6. *Teachers of Drawing.*—Teachers of drawing are nominated by the Minister from the lyceums and colleges. They are not to be styled titular professor unless they have the "*brevet supérieur.*" In the absence of candidates provided with one or the other "*brevet*," non-diplomaed teachers may be a "*chargé de cours*" with the provisory title. This can, however, only be with the concurrence of the Minister of Arts (Art 1).

In regard to the teaching of *gymnastics*, it may be said that the order of 13th September, 1882, requires that no one shall be nominated professor of gymnastics in the lyceums unless he has the "*certificat d'aptitude*" instituted by the decree of the 3rd February, 1869, and unless he gives at least twelve hours of lessons per week.

7. *Chargés de cours.*—The functions of the "*chargés de cours*" are similar to those of the titular professor. By Art. 1 of the decree of 21 February, 1897, they are entitled to the same discipline and privileges as titular professors after five years of service, whether they are still *Chargés de cours*, or are college masters.

8. *Pursers (Economes).*—The regulation for the economic service of lyceums is dated 30th March, 1863. The purser is charged, under the authority and direction of the Principal, with the whole of the details of the internal service. With the consent of the Principal, he selects the domestics, supervises them and

[1] The order of 21 prairial an II, Arts. 13–16, 18–20 indicate the duties of the proctors.

and with a view to maintaining the health of the school assures himself that cleanliness reigns in all parts of the house. He attends to the receipt of all kinds of furniture, and to the daily delivery of meat and bread. He makes all purchases, prepares the statements of accounts and of the conditions of purchases. He directs the entire work of the bureau, checks the cash every evening, and holds himself personally responsible for the book of daily consumption, and the book of entry and dispatch of commodities and merchandise. Further, he is charged with the outgoing correspondence of his department (Art. 1). The detailed instructions relating to the economic service of lyceums bear the date 9th April, 1863.

The purser may be assisted by one or two clerks *(commis d'économat)*. These, under his authority, take part in the internal supervision, correspondence, etc., books, accounts, in a manner approved by the Principal. (See order of 30th March, 1863, Arts. 2–5, 7). In order to be a correspondence clerk in a lyceum[1] *(commis aux écritures)* it is necessary, according to the law of 7th July, 1890, (1) to have obtained the diploma of "*bachelier ès lettres*" or "*bachelier ès sciences*," or to have the diploma of a special secondary teacher ; (2) to have been assigned by the Minister for a year at least to the work of correspondence clerk as deputy, (3) to have passed a qualifying examination.[2] (Art. 1)

The deputy correspondence clerk must be at least 30 years of age, and must have satisfied the prescription as to military service (Art. 2).

The duration of deputy service is one year, but may, on the recommendation of the rector, be extended to two years in favour of the clerk who, having failed in his examination, has nevertheless given evidence of aptitude and knowledge (Art. 3).

At the end of each quarter, the rector transmits to the Minister a certified statement by the purser, viséd by the Principal, declaring their opinion as to the aptitude and progress of the deputy corresponding clerks (Art. 4).

9. *Masters (Répétiteurs)*[3].—By the decree of 28th August, 1891, masters possessing the ministerial nomination are members of the teaching public, and enjoy all the prerogatives attached to that position (Art. 1).

They take part in the education and teaching of the lyceums and colleges, and are charged with the supervision and maintenance of discipline. In the class-rooms they direct the work of the pupils ; assure themselves as to the proper discharge by the students of their various tasks, and regularly transmit to the proctor, or to the principal and the professors their notes on these various matters. To them may be assigned, under indications from and general control by the professors, the duty of giving special lectures to certain pupils. They participate in the supervision of various courses, and wherever deemed necessary (Art. 2.)

In the lyceums the titular masters *(répétiteurs titulaires)* are of two kinds, viz., divisional *(répétiteurs divisionnaires)* and general *(répétiteurs généraux)*. Those who belong to the first class receive the title of head master *(répétiteur principal)* (Art. 3).

The principal *(proviseur)* or head *(principal)*, acting under the authority of the academy-inspector, divides the various duties among the masters. All demands are forwarded by the chief of the establishment to the rector, who takes action thereon as necessary (Art. 4).

The duties of the masters of the lyceum are so regulated that each may have during the class days :

(i) Excluding duties concerning the dormitory and the first morning study, *a maximum of six hours' service.*
(ii) In those cases where they are free from dormitory duty, *six hours of service at least, and six hours of liberty*, from the rising to the retiring of the pupils.
(iii) In both cases, *at least three consecutive hours of liberty.*

The hours of service rendered by masters in the various studies are expected to be wholly devoted to the pupils placed under their particular charge, that is, in the way of controlling and directing their work, dictating or correcting texts, notes, reports, quarterly and bi-quarterly bulletins, etc. (Art. 5).

In the "*internats*"[4] of the lyceums, where they have not the privilege of general leave, the masters shall have, once a fortnight, an entire day's leave, viz., from the time of rising to that of the retiring of the pupils.

Five hours' liberty shall be granted to the masters on the days when there are neither lessons nor promenades.

The masters shall be granted at least thirty days' leave during the principal vacations.

In the case of lyceums for day scholars, service will be assured on Sundays or leave days, and during the periods of vacation by at least one master (Art. 6).

The service of a master may be extended on a week-day beyond the maximum, but only on the condition that there shall be an equivalent diminution of service on one of the following days as compensation (Art. 7).

The prescriptions of articles 5, 6, and 7 may be departed from only in exceptional cases, and in cases where the exigencies of service absolutely require it. Special mention will be made of these in the weekly or bi-monthly bulletin addressed to the academy-inspector (Art. 8).

In the colleges, the service is so regulated that each master may have, during the class-days, at least four hours of liberty, of which two hours shall be consecutive.

He is granted, on a Sunday or a Thursday, a half-day's leave twice a month ; and four hours, when possible *consecutively*, on other Sundays and holidays.

10. *Appointment of Masters.*—The masters are either titular or assistant *(répétiteurs titulaires ou stagiaires)*. The former are nominated by the Minister upon the recommendation of the Rector, after passing through a stage hereinafter referred to. The latter are appointed, and removed by the Rector, the matter, however, being always reported at once to the Minister (Art. 10).

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[1] The office so named hardly conveys the right impression, as correspondence clerk is often used with us to indicate a very inferior office, *i.e.*, a mere writing clerk.
[2] According to annexure, number 1 of the decree of March, 1863.
[3] A répétiteur is a sort of assistant professor or tutor. 'Master' does not quite express his office.
[4] The residential quarters for the pupils.

Either in the case of the lyceums or communal colleges, both must be either born or else naturalised Frenchmen, of at least 18 years of age, and possessing the diploma of "*bachelier.*" The titular masters must, in addition, have passed at least one year as assistants. This stage, however, is not required of candidates who are "licentiates" (*licenciés*), or who possess secondary the teacher's certificate."

The masters for the lyceums are selected either from among the "*licenciés*" or "*assimilés,*" or from among the titular masters of the colleges. A licentiate called to act as master in a lyceum only becomes titular after a three months' probation, either in the lyceum itself or otherwise in a department of public instruction of a similar character; and during his probation his salary is that of the lowest class.

The office of "assistant" (*stagiaire*) ceases at the end of the probationary stage, unless he is proposed as Master, or as titular officer, or for a fresh probation, viz., of a year in the colleges or three months in the lyceums (Art. 11).

A divisional master is specially attached to each "division," the number in a division being determined by the Minister on the recommendation of the Rector. Generally there are between thirty and thirty-five pupils in a division (Art. 13).

In the lyceums of towns which have no "*facultés*" there are, above the divisional masters, general masters, the number of the latter being equal to half the number of the former. Masters assigned by ministerial decision to general supervision, or to preparatory work, are not included in the above-mentioned indications as to proportion. There is, further, in all lyceums having more than 400 boarders a master in charge of the hospital service.

In every lyceum one of the masters may be employed in correspondence of an administrative or other character, and may also be occupied at other service; and in lyceums with more than 600 pupils two masters may be so occupied. During vacation the masters actively engaged must, according to the need of the case, attend to all correspondence which does not belong merely to the general management; and in any case of necessity a general master discharges the functions of a divisional master (Art. 14).

Passing over a number of provisions in regard to general discipline, and in regard to the functions of the masters, it is prescribed in Art. 26 that the masters shall have the use of the lyceum library, under the supervision of the principal or proctor, and that a conveniently-furnished room, properly lighted and heated, shall be placed at their disposal for their work in common. Moreover, wherever the arrangement of the buildings admits of it, every master lodging in a lyceum or college has a right to a special room, notwithstanding that he may sleep in the dormitory, and the attendance for this room is to be charged against the establishment, and is to be under the supervision of the purser in the lyceums and under that of the principals in the colleges. The masters take their meals in a room distinct from the pupils in the refectory; or, if that be not possible, at a table of their own (Art. 26).

The masters, unless relieved therefrom by the Rector, must attend regularly the courses and lectures organised for the higher grades (Art. 27).

Titular masters can be removed only by the Minister, on the recommendation of the Rector; and, when transferred to another locality, their "*dossier*" should be addressed to the Rector of the academy to which they are called (Art. 28).

11. *Disciplinary Regulations.*—The disciplinary penalties to which masters may be subjected are:—

(1) Warning; (2) Reprimand; (3) Degradation of office (general master to divisional master); (4) Degradation of class; (5) Removal to a lower service; (6) Suspension from office, with total or partial suspension of salary; (7) Revocation of office; (8); Suspension from office for a period not exceeding five years; (9) Absolute interdiction—that is, annihilation of office (Art. 29).

The *warning* is given by the academy-inspector, the *reprimand* inflicted by the Rector, on the recommendation of the principal or of the head-master and the academy-inspector. Degradation from the office of general master to that of divisional master is pronounced by a rectorial decision, upon the advice of a meeting of local academy-inspectors; and in certain cases this action may be taken by the Rector himself. Degradation of class, change to a lower service, and suspension from service are pronounced by the Minister, on the advice of the Rector. Revocation of office depends on Ministerial action taken on the advice of the committee of secondary-teachers. The long-period suspension and the absolute interdiction may be pronounced only by the Academic Council under conditions determined by the law of 27th February, 1880 (Art. 30).

Masters, however, must at all times be heard in their defence, and their written explanations shall be transmitted to the competent authority before any disciplinary measures are taken against them (Art. 31).

And, in very grave cases, the Principal or Head-master may instantly suspend a master, and, if necessary, may require him to leave the establishment; but in such cases the matter must be at once referred to the Rector. The master so suspended receives salary until the decision of the competent authority (Art. 32).

12. *Heads and Governors of Colleges.*—By the Decree of 17th March, 1878 (Art. 31, Sec. 3), the Heads and Governors of Colleges (*principaux et Régents*) must have the grade of "*bachelier*" in the "*Faculté des Lettres*" or the "*Faculté des Sciences,*" according as they are to teach anguages or mathematics; and, by the Decree of 12th January, 1867, the Regents of Colleges shall bear the title of Professor. By the decree of 27th June, 1892 (Art. 1), the Professors of Communal Boys' Colleges are divided into three orders. No person can become a professor of the first order unless he possesses the "*aggrégation*" of secondary teaching, or the "*licence ès lettres*" or the "*licence ès sciences,*" or unless he has the "*certificat d'aptitude*" for secondary education, or the "*brevet de Cluny*" (Art. 2).

In order to be a professor of the second order it is necessary to have the "*baccalauréat*" or the "*brevet de capacité*" in special teaching, obtained prior to 1st January, 1887. To be a teacher of the third order it is necessary to have the "*brevet supérieur*" and the "*certificat d'aptitude pédagogique*" (Art. 2).

A number of college-teachers in each of these orders is determined in each college by the number of "Chairs" (*chaires*) of the 1st, 2nd, and 3rd order, provided for in the creation of the establishment (Art. 3).

Slight modification has been made by the Decree of 14th May, 1897 (Arts. 1 and 2), to which reference need not be made, as the aim here is to give a general idea only.

13. *Physician, Surgeon, and Pharmacist.*—By the Regulation of 19th September, 1809, and the Order of 30th December, 1831, the physician, surgeon, and pharmacist are chosen by the Principal, and their remuneration determined by the Academic Council upon the recommendation of the Principal. The Principals of the Colleges present the nominations of the physicians, etc., for the approval of the Minister.

14. *Inferior Offices.*—By the Order of 30th April, 1894 (Art. 1), the boys who assist in the lyceums, or the laboratories therein, receive the title "*aide de physique*," which is conferred by the Rector, upon the recommendation of the Principal and the advice of the Professors of Physics in the establishment. They pass from one class to the other with, at least, five years' service, and, after ten years' service in the highest class, receive annual gratuities for seniority of service. Their annual payment is as follows :—

Lyceum.	1st Class.	2nd Class.	3rd Class.
	£	£	£
Lyceums of the Seine and of the Seine-et-Oise. Externes ...	48	44	40
Lyceums of the Seine and of the Seine-et-Oise. Internes ...	32	28	24
Lyceums of other departments	24	20	16

The gratuities referred to are fixed at £8 per year in the first two cases, and at £4 a year in the last.

15. *Professional Obligations of the Secondary Teaching Staff.*—In order that secondary teaching may have a high value, it is important that each master or professor should be thoroughly educated in his subject, and should keep *au courant* with all its developments. This can be done only by maintaining a studious life, and by coming into intellectual and general touch with colleagues in other departments. To avoid the narrowing effect of extreme specialism is of great importance. It is, for this reason, necessary to have some contact with other branches of learning. Further, it may be remarked that both efficient study and efficient teaching require that the mind be maintained comparatively fresh.

In all countries where teaching is really excellent, attention is paid to such matters as have been just mentioned ; and in comparing the education provided by different countries, it is necessary to take into account whether their general conditions require teachers to devote practically the whole of the time to teaching all sorts of subjects, or whether they limit their teaching to cognate groups, and afford abundant opportunity for that extended culture and continued research without which a broad outlook and an inspiring interest in the trend of the world's development are impossible.

The progress of human knowledge demands considerable devotion in the way of continual publication of improved treatises from the various academic subjects that command the attention of students. The proper persons to discharge this office are teachers engaged in higher secondary teaching, or in University teaching, from which it is obvious that education can only reach a high degree of efficiency where a staff has considerable leisure for its own development. This is a truth vividly realised in the more intense centres of civilisation.

The professional obligations of the secondary teaching staff of France will throw some light upon the possibility of fulfilling the above requirements. Those who have any knowledge of higher French literature, either of a general or of a specially scientific character, will appreciate how far their *régime* is responsible for the merit and brilliancy by which their work is distinguished.

By Article 1, of 25th August, 1892, the weekly service of the Professors in the national Lyceums in the *départements* of the Seine and Seine-et-Oise, and also of the other *départements*, is as follows :—

Professor.	Maximum Service—Hours per week.	
	Département Seine, etc.	Other Departments.
	Hours.	Hours.
Special Mathematics	10 + 2 supplementary.	12
Rhetoric Preparatory course for the école *normale supérieure* and the *faculté des lettres.*	Special Regulation.	.....
Philosophy, Rhetoric, History	12	14
Mathematics, First Chair—		
Centrale, Saint-Cyr		
Navale, last year	12	14
Élémentaries		
First Modern (Science)		
Physics and Chemistry, First Chair	12	14
Do do Second Chair	14	15
Natural History	14	15
Mathematics, Second Chair	14	15
Literature (Second and Third)	15	16
Grammar	15	16
Modern Languages	15	16
Literature (Modern)	15	16
Science (Modern)	As for the Science Professors in the Classic Division.	
Elementary Classes (7th and 8th)	19	20

The maximum service above indicated is reduced by an hour in the case of Physics, Chemistry, and Natural History wherever the professor has the responsibility of maintaining a cabinet of material. The maximum service of professors in the classical division is also reduced by an hour in the case of those who, independently of their work in that division, are charged with the whole of the teaching in French, in a class in the modern division (Art. 1).

Professors of the elementary classes possessing a "*certificat d'aptitude*" for the teaching of a modern language (English or German) in lyceums, colleges, normal schools, or in primary superior schools, receive an increment of £12 a year on the condition that in the nineteen regulation hours of their teaching there shall be four hours devoted to the teaching of the modern language mentioned on the syllabus (Art. 2).

The maximum service of the "*chargés de cours*" who have not attained 50 years of age is one hour more than that of titular professors teaching the same subjects. From 50 years onward the maximum service is equal in both cases (Art. 3).

Every professor or "*chargés de cours*" may be required to give two supplementary hours of service beyond his maximum service, unless prevented by considerations of health. For this there is a special remuneration determined by the regulations.

Titular professors and "*chargés de cours*" of drawing are required to give a maximum of sixteen hours' lessons per week (decree of 16th September, 1880).

The teachers of gymnastics are also required to give sixteen hours' instruction per week (order of 13th December, 1882).

The above will give some idea of the staffing of the national lyceums and colleges, and, incidentally, of the educational qualifications of the staff. To obtain a more comprehensive conception of the real character of these institutions, it is essential that the nature of the professional education of the secondary teacher be exhibited. This will be referred to in the chapter immediately following.

In conclusion, it may be remarked that the qualifications, both of the teaching and administrative sides, are excellent, and ensure good results generally.

CHAPTER XV.

Organisation of Secondary Education in France.

Professional Education of the Teaching Staff, etc.

[G. H. KNIBBS.]

1. *Introduction.*—Reference has already been made to the importance of the thorough education of teachers, and in the preceding chapter a general idea of the professional qualifications has been incidentally disclosed. The present chapter gives a much fuller outline of their education, and their preparation for the office of secondary teacher. As already noticed, teachers of secondary schools can qualify in various ways, that is, by following certain educational paths, one of which is the higher normal school, to which reference will first of all be made.

In endeavouring to estimate the character of the education in the Secondary Schools of France, it is well to remember again the excellence of the preparation of the teachers of their ordinary primary schools. In Chapter XXXV of the Interim Report it was shewn that the curriculum of the course hrough which they passed in their professional education was of a high order. It ought to be here remarked that, notwithstanding this, the elementary classes in the Secondary Schools are taught by persons possessing still higher qualifications, and generally better educated.

It is also important, if one desires to get a correct impression of, and to really understand, the state of education in a country in which all grades of instruction are supplied by highly qualified teachers, to emember that the effect of this is cumulative. A well-informed public not only ensures the disappearance of half-qualified instructors, and a adequate appreciation of thoroughness in all grades of education, it also affords greater security against a too ready acceptance of incompetents for those high offices upon which the greater affairs of a country so much depend. It does this by ensuring that their judges of persons aspiring to high office are truly qualified to judge, and by intensifying the popular respect for education. These are a *sine qua non* for every country that expects to hold its own in the industrial and commercial competition which is characteristic of advanced civilisation, and react not only upon general, but also upon educational appointments.

2. *Higher Normal School.*—As early as 1808, by the decree of 17th March in that year, it was declared that there should be a normal residential school *(pensionnat normal)* designed to accommodate 300 students who wished to be trained in the art of teaching literature and science (*Art.* 10); and in the rdinance of 6th December, 1845 (Art. 1, sec. 2), the title "Higher Normal School" *(École normale supérieure)*

supérieure) was conferred. By Art. 1 of the decree of 4th August, 1848, the maintenance of all pupils admitted to this school was undertaken wholly by the State. Regulations as to admission, administration, and discipline were framed, and bear the date 7th December, 1850. These are not especially important, and will not be referred to in detail.

By the decree of 10th April, 1852 (Art. 5, sec. 1) the *École normale supérieure* was to prepare for the degree of *licencié ès lettres*, that of *licencié ès sciences*, and for exercise in better teaching methods, and school discipline. By the regulations of the 15th September in the same year, the *École* was divided into two sections, viz., that of literature and that of science (Art. 1), the course of study in each lasting *three years* (Art. 2), the sections being distinct from the first year, excepting that certain elements were common (Art. 3). During the whole duration of the course, the aim of each section was not merely to give exact and excellent instruction, but to confer every qualification necessary for a teacher, and during the final year this point of view absolutely dominates the whole of the exercises (Art. 4). An order of 26th June, 1872, dealt with examination matters not of special importance to us at present, and the same remark applies to regulations of 23rd November, 1875.

The order defining the conditions of entrance to the literature section of the *École normal supérieure* bears the date 26th December, 1885. The applicants have to pass an examination involving—

(i) A dissertation on philosophy (in French).
(ii) A Latin composition.
(iii) An essay in French.
(iv) A Latin translation.
(v) A Greek theme.
(vi) A composition on history.

In the order of 17th January, 1896, the candidates for admission to the science section of the *École normale supérieure* must be of the degree of "*bachelier*" of secondary classic education or secondary modern education (Art. 1), the tests being divided into those of the first or second degree (Art. 2).

The tests of the first degree consist of—

(i) A mathematical composition.
(ii) One in physics.
(iii) A French dissertation.

The time allotted being six hours for each of these (Art. 4).

The tests of the second degree consist of—

(i) An examination in mathematics.
(ii) One in physics.
(iii) One in chemistry.
(iv) An examination in applied mathematics, in the limits of the branches studied in the special mathematics.
(v) Two exercises in translation, viz., any two of three passages submitted, one in each of the languages, Latin, German, English.

Four hours are allowed for the applied mathematics, and also for the two translations.

The relative value of the different subjects is as follows:—

Tests of first degree—
Mathematics 10, physics 7, French 3.

Tests of second degree—
Mathematics 40, physics 20, chemistry 12.
Applied mathematics 5, translation 4.

Some conception of the grade of teaching will be had by referring to the succeeding chapter in which the curricula are given for the lyceums and colleges.

3. "*Agrégations*" *and* "*Certificats d'aptitude.*"—The examinations which admit to "*Agrégation,*" that is to fellowship (in teaching, or to a species of professorship) are of special kinds. The general idea of secondary teaching, it ought to be explained, is to teach within a limited field in which one is eminently well informed, and not to attempt to teach subjects touching the whole range of human knowledge. The good sense of such a method is obvious.

Examinations for "*agrégation*" (*Concours d' agrégation*) are fixed by the Minister (according to the Statute, etc. of 29th July, 1885, Cap. 1, Art. 1) six months in advance, the examiners (judges) being three or more (Art. 2). The candidates presenting themselves must have previously qualified as follows—(Art. 3), viz:—

For Agrégation in—

(*a*) *Philosophy.* (1) *Licence ès lettres;* (2) *baccalauréat* of secondary classic teaching; *lettres-mathématiques*, or a certificate stating that they have followed at least one of the three series (theory and practice) in the preparatory course for the certificate in the study of physics, chemistry, and natural history, and have passed the corresponding part of the examination. (Order of 31st July, 1896.)
(*b*) *Literature. Licence ès lettres.*
(*c*) *History and Geography.* (1) *Licence ès lettres*; (2) diploma in higher studies in history and geography, or in default either the diploma as archivist in palæography, or in the school of advanced studies (*école des hautes études*) in the section of history and philology. (Order of 28th July, 1894.)
(*d*) *Grammar. Licence ès lettres.*
(*e*) *Modern Languages. Licence ès lettres* or *certificat d'aptitude* in the teaching of modern languages.

Order of Sciences.—For the *agrégation* in Science, the diploma of *licencié ès science* with mention of the following certificates is required as follows :—

(*f*) *Mathematical Sciences.*—(1) Differential and integral calculus; (2) rational mechanics; (3) any other certificate in the list of mathematical sciences, at the option of the candidate; (4) general physics.

(*g*) *Physical Science.*—(1) General physics; (2) general chemistry; (3) mineralogy, or any other certificate in the order of mathematical, physical, or natural science; (4) rational mechanics.

(*h*) *Natural History.*—(1) Zoology; (2) botany; (3) geology; (4) general physics, or general chemistry.

The diplomas of *licence ès sciences* under the earlier régime are admitted as equivalent to certificates in the following :—

(i) *Mathematical Science.*—Differential and integral calculus, rational mechanics, astronomy.
(ii) *Physical Science.*—General physics, general chemistry, mineralogy.
(iii) *Natural History.*—Zoology, Botany, Geology (see order of 16th August, 1899).

Some of the provisions are modified in the case of doctors of physical science, natural history, and medicine, by the statute of 29th July, 1885, and order of 22nd December, 1864, which need not be referred to in detail, the principle adopted being that equivalence of proof of qualification is all that is required.

For the *certificat d'aptitude* in the teaching of modern languages, the diploma of *bachelier*, or a foreign diploma recognised as equivalent is required, or the literary *certificat d'aptitude* for special secondary teaching, or the *certificat d'aptitude* or teachership for elementary teaching, or teachership in the *écoles normales* (order of 24th December, 1887). The above is for men. For women, the *brevet de capacité supérieur* of primary teaching, or the final diploma in secondary course for young ladies (*etudes secondaires des jeunes filles*) is required. (Order of 21st July, 1883).

4. *Examinations for Agrégation in the Lyceums.*—In the examinations for "*agrégation*" in lyceums there are preparatory and definitive tests (Statute, 29th July, 1885, Cap. III, Art. 6), the former consisting of written papers, in which four hours are devoted to these and translations, and seven hours to other papers. The definitive part of the examination consists of explanations of passages, etc., in lessons, and practical tests, a quarter of an hour being allowed for preparation, but without recourse to any aids. The oral examination is public.

In the "*agrégation*" in philosophy (Order, 31st July, 1896), the preparatory test consists of—

(*a*) Two dissertations on dogmatic philosophy, touching psychology, logic, ethics, education, metaphysics.

(*b*) One dissertation on the history of philosophy.

(After passing this the candidate is entered on the list of admissibility to the 1st degree).

(*c*) After twenty-four hours' preparation, a lesson of one hour or more upon a subject in the history of philosophy or in critical philosophy.

(*d*) In the definitive test, the candidates, after twenty minutes' preparation, explain and comment for a half-hour or more upon—

(i) A text in Greek philosophy.
(ii) A text in ancient or modern philosophy, in Latin.
(iii) A text in modern philosophy, in French.

(*e*) The candidates, after twenty minutes' preparation, also give a lesson for an hour or more upon the subject of philosophy as treated in the teaching programme of the lyceums.

In the "*agrégation*" in literature, the candidates are required in the preparatory test to do (Order of 17th July, 1897, Art. 18)—

(*a*) A paper in French.
(*b*) One in Latin.
(*c*) One on questions of grammar.
(*d*) A Latin translation.
(*e*) A paper on prosody and elementary metrics.
(*f*) A Greek paper.

In the first and second portions of the definitive test, which consists of five different parts, the candidates explain and translate—

(*g*) A Greek extract;
(*h*) A Latin extract;

each of medium difficulty. The candidates are allowed fifteen minutes' preparation, without books or notes, and the examination on each lasts a half-hour. (Art. 19.)

In the third part of the definitive test, the candidate is required to explain, and shew also how he would do so in class, an extract from a French classic, from a list indicated some time beforehand by the Minister and also translate and explain some few lines from an old French author. The preparation and length of examination are as in the preceding case.

In the fourth part of the definitive test, the candidate explains a Greek or Latin passage taken from a list of authors indicated some time previously by the Minister, and makes literary and philological comments thereupon. For this he has five hours' free preparation, and the examination lasts forty-five minutes.

The fifth section of the definitive test is a lesson upon a subject in classic literature taken from the authors in the programme, each candidate having twenty-four hours' free preparation therefrom, and the duration of the examination being an hour or more.

The

The "*Agrégation*" *in Grammar* depends on the Order of 31st July, 1896. In the preparatory test the candidates do,—

(*a*) A French composition.
(*b*) One or more questions of Greek or Latin grammar.
(*c*) An essay on one or more questions of grammar, prosody, and metrical French.
(*d*) A Latin exercise.
(*e*) A Greek exercise.
(*f*) A Latin translation.

The definitive test consists of four parts. In the first the candidates explain and translate a Greek and a Latin test of medium difficulty, having twenty minutes' preparation without books or notes for the two, and being examined for twenty minutes in *each*. (Art. 23.)

In the second part, the candidates explain an extract from a French classic, and translate and explain some lines from an old French author, shewing how they would explain in class. The examination is for a half hour after fifteen minutes' preparation, without aid, of any kind. (Art. 24.)

For the third part, the candidates explain a Greek and a Latin text from ministerially indicated works, the explanation being followed by a thorough commentary. Five hours' free preparation is allowed, and the examination lasts about one hour.

The fourth and last part of the test is the giving by the candidate after five hours' preparation, a lesson of a half hour or more on ancient history.

The *Agrégation in history and geography* is governed by the Order of 16th July, 1897. The examination is as follows :—

(*a*) An essay on ancient history;
(*b*) One on the middle ages;
(*c*) One on modern or contemporaneous history;
(*d*) One on geography ;

the subjects being selected from a programme fixed by ministerial order.

This admits to the first degree. Next follows an examination either in *historical* or *geographical* teaching, the subjects being taken so as to allow twenty-four hours' preparation. For history the subjects are in the one period, that is, are all from antiquity, or from the middle ages, or are all modern ; and in geography the subjects are drawn from the physical side of the subject. The candidate explains how he would treat the subject in class.

On passing this, the candidate is admitted to the definitive proof, which consists of two lessons in history and one in geography.

The lessons in history are selected from periods other than those originally selected, and candidates who have previously taken a geographical subject, give a lesson in ancient or mediæval history, and one in modern history ; twenty-four hours being allowed for preparation, and the lesson lasting not more than forty-five minutes.

Candidates who pass, if they have the diploma of higher studies in history and geogrpahy, submit to the President of the examining board, the memoir which they presented in order to obtain that diploma ; or if they have the diploma of archivist in palæography ; or that of the history and philology section of the *École des hautes études*, they submit the thesis presented at the *École des chartes* or at the *École des hautes études*, and these are taken into account on the classification of the candidates proposed for the title of "*agrégé*."

The *agrégation in mathematical science* involves passing a preparatory test constituted as follows :—

(*a*) A paper on elementary mathematics.
(*b*) One on special mathematics.
(*c*) One on analysis and its geometrical applications.
(*d*) One on rational mechanics.

The definite proof comprises—

(i) A lesson in elementary mathematics, after three hours' preparation, without aids.
(ii) A lesson in special mathematics, after four hours' similar preparation.
(iii) Two papers, a test in descriptive geometry and one in computation.

The conditions of *agrégation in physical science* are fixed by the Order of 19th January, 1897, and involves for the preparatory test, the passing of :—

(*a*) A paper in physics ;
(*b*) One in chemistry ;

the subjects being taken from the secondary classic or secondary modern programmes.

(*c*) A paper on one or more physical subjects previously notified.
(*d*) A paper on problems and applications.

The definitive tests are—

(i) A lesson on a question in physics.
(ii) One upon a question in chemistry. One of these, at the candidate's option, is preceded by twenty-four hours' preparation, the other by one of five hours' preparation, with closed doors, the necessary documents for this last, however, being placed at the disposal of the candidate.
(iii) A test in practical physics and chemistry (*i.e.*, actual operations). (Art. 34.)

The nature of the examination, etc., for *agrégation in Natural History* is fixed by the order of 18th January, 1897. Four papers have to be taken in the preparatory test, viz. :—

(*a*) One on zoology ;
(*b*) A second on botany ;
(*c*) A third on geology and palæontology ;
(*d*) And a fourth upon a question related to the methods and system of natural history ;

In

In the definitive test the candidates give three lessons, viz., one on each of the three subjects, (*a*), (*b*) or (*c*).

Each of these lasts one hour, one, given after three hours' preparation without aids, is at the option of the candidate. The other two are given with the aid of works and diagrams, of which a list is published.

In addition, the candidates give practical evidence of being able to make—

(1) Animal and vegetable preparations, with the use of the microscope.
(2) Determination of samples in the three kingdoms, using such instruments and works as the jury (examiners) deem necessary.

The preparatory test for *agrégation in modern languages* comprises—

(*a*) An exercise.
(*b*) A translation.
(*c*) An essay in a foreign language.
(*d*) An essay in French.

One of the essays must bear upon the question of literature, the other on the question of language. The candidates, however, must use neither dictionaries nor lexicons.

The definitive test consists of three parts, viz. :—

(i) An explanation of a passage from an English or German classic, previously notified by the Minister; and an oral theme.
(ii) Two lessons, one in French, the other in the foreign language selected by the candidate. One of these is taken from the authors in the programme, the other is borrowed from literary history. Each lasts an hour, and is preceded by a preparation of twenty-four hours.
(iii) The third part is a translation of a prose English author for candidates for the German *agrégation*, and a prose German author for the candidates for the English *agrégation*.

The *agrégation in Spanish-Italian or Italian-Spanish* demands that the candidates possess one of the following degrees, viz. :—

(1) Licence ès lettres.
(2) Certificat d'aptitude for the teaching of Spanish or Italian with the baccalauréat of secondary classic teaching (first part), or a foreign title equivalent to the said baccalauréat.

The preparatory test comprises (*a*) an exercise, (*b*) a translation, (*c*) a foreign language, (*d*) an essay in French ; the conditions being the same as in the last case.

The conditions of the three parts of the definitive test are the same as in the preceding, Spanish and Italian being substituted for English and German, and some minor provisions being different.

There is also an *agrégation for the whole four, viz., German, English, Italian, Spanish*, which hardly requires detailed explanation.

The examiners arrange the list in the order of merit of those proposed for the title of *agrégé*, or for receiving the *certificat d'aptitude*.

5. *Examination for Certificat D'aptitude for Teaching in Elementary Classes.*—The decree governing the examination of those who desire to qualify for teaching the elementary classes in a secondary school is dated 31st July, 1894 (*Certificat d'aptitude au professorat des classes élémentaires de l'enseignement secondaire*).

Candidates must be at least 20 years of age at the commencement of the examination, and possess one of the following titles, viz. :—

(1) Diploma of *bachelier*.
(2) *Certificat d'aptitude* for special secondary teaching, or the "*brevet de Cluny*."
(3) *Brevet supérieur*, with the *certificat d'aptitude* for primary teaching.
(4) *Certificat d'aptitude* (science or literature) for teaching in the normal schools and the superior primary schools (complete certificate).
(5) Diploma at completion of secondary studies for young ladies.

The examination is as follows (see Order of 1st August, 1894) :—

Written examination :—

(*a*) (i) French essay (4 hours).
(ii) Dictation.
(iii) Various grammatical or literary questions.
(iv) Explanation of words and ideas.
(v) Grammatical and logical analysis.
(vi) Families of words, etymologies, synonyms, homonyms, etc.

(*b*) German (4 hours).
(i) Exercise.
(ii) Translation.

(*c*) *History and Geography* (4 hours).
(i) A question of history.
(ii) A question of geography, with sketch.

(*d*) Science (4 hours).
(i) One or more questions in arithmetic, theory, or problems, or all together.
(ii) One or more questions upon the elements of physical and natural science.

Oral

Oral Examination :—

(*a*) Reading of a French author of the 17th, 18th, or 19th century. Explanations of text, ideas, words (test, 20 minutes ; preparation, same time).

(*b*) Practical exercises in language and grammar, as far as possible on the board, on a given passage. Application of grammatical rules, construction of phrase and statements, choice and place of words, value of turn, rational criticism, and, if needs be, correction of text (preparation and examination, each 20 minutes).

(*c*) Reading German. Translation of a passage read. Grammatical question. Conversation in German (20 minutes).

(*d*) Lesson in history or in geography (preparation, 40 minutes ; test, 20 minutes). The geography lesson is given with the blackboard.

(*e*) A lesson either upon arithmetic, physical science, or natural history, with the objects (when possible) forming the basis of the lesson (preparation, 30 minutes ; lesson, 15 minutes).

(*f*) Exposition of a pædagogical question (preparation and examination, each 15 minutes).

The subjects of both written and oral examinations in history, geography, and science, are borrowed from the programmes of the elementary classes, viz., 7th and 8th.

The *certificat d'aptitude for the teaching of drawing* in lyceums and colleges is of two kinds, viz., first degree, and higher degree. Candidates who obtain the Rome prize (prix de Rome) are considered as possessing the certificat d'aptitude of the first degree.

6. *Science Qualifications.*—Candidates for secondary teaching, in which the degree of licencié ès sciences is required, must have a diploma shewing that they have satisfied their examiners in the following subjects, viz. :—

I. (*a*) Differential and integral calculus.
(*b*) Rational mechanics.
(*c*) Astronomy, or one other subject among the mathematical sciences.

II. (*a*) General physics.
(*b*) General chemistry.
(*c*) Mineralogy, or one other subject among the mathematical or physical sciences, or natural history.

III (*a*) Zoology.
(*b*) Botany.
(*c*) Geology

7. *General remarks.*—The regulations for proof of their qualification shew intrinsically how well prepared are the French secondary teachers for their professional offices. They should be read in connection with the chapter next following, giving the curricula which are to constitute their guides in the details of teaching. The characteristic feature is that a general education extending beyond the limits of their teaching is demanded, and in the special subjects of teaching the proof of qualification is very thorough.

It is, of course, true that there are men of prodigious memory, and encyclopædic in their knowledge. These however are very rare ; and to demand, as is sometimes done, that teachers shall include ancient and modern history and literature, and several sciences in their course of study is to ensure *inferior* education.

The French system, in so far as the professional qualification of the teacher is concerned, ensures that thoroughness that comes from specialising with breadth of general outlook.

The education in a French lyceum is of a very high order, and the teaching staff is well qualified to maintain its prestige.

CHAPTER XVI.

CHAPTER XVI.

Reorganisation of Curricula in French Secondary Education.

[J. W. TURNER.]

New Scheme.—A development of profound significance in French Secondary Education was inaugurated in October, 1902. After two years of inquiry and deliberation, a new scheme of Secondary Education for France was matured and in that month was put into actual operation. Hitherto France had suffered from the charge of possessing a system of secondary education that was, firstly, insufficiently related to its excellent primary system, and that, secondly, unduly exalted the value of a classical over that of a modern education. These two main defects the new scheme sought to remove.

Baccalauréat of Secondary Education.—At the outset it was decreed that the old distinction of Classical and Modern Baccalauréat of Secondary Education should forthwith disappear and that in future there should be but one such degree, entitled the "Baccalauréat of Secondary Education." The practical significance of this modification lay in the fact that it opened the higher careers indiscriminately to all possessors of the Baccalauréat, by whatever course of studies it was secured.

More than this, the old denominations of Classical and Modern Education were to be discarded, and all such education to be called in future by the one name of "Secondary Education." The whole change has been inspired by a desire to level up modern education to the rank of classical education, so that students in their choice should not be unduly influenced by any traditional prejudices in favour of the latter. That this levelling up process may be fully consummated, the Minister, in his instructions to the Rectors *re* the initiation of the new programmes, emphasises strongly the necessity to maintain the two courses "at the same level" of educational worth.

Programme of Studies.—The programmes of studies, too, have been thoroughly overhauled, and such modifications made as would bring them into closer harmony with the economic needs of the time. Thus, science, drawing, &c., receive fuller attention, both on their theoretical and practical sides.

Present Organisation.—As now constituted, Secondary Education follows upon a four years' course of purely primary instruction, and extends over a period of seven years. It is divided into two great cycles, termed the "first cycle" and the "second cycle."

The first cycle, embracing four years, consists of two parallel courses, open to the pupils' choice. In the one course Latin is a compulsory subject throughout; Greek becomes a subject of study in the third year, but is optional.

In the other course, there is neither Latin nor Greek, but additional science, drawing, modern languages, &c.

Certain subjects, as history, geography, &c., are taken by the two sections in common.

At the end of the First Cycle, a "Certificate of Secondary Education" may be awarded those pupils whose work has been satisfactory throughout the four years of the course.

The Curriculum of the Cycle is so organised that those discontinuing their studies at its termination find themselves "in possession of a body of knowledge complete in itself."

The Second Cycle, extending over three years, offers four groups or courses to the choice of pupils. These are:—

1. Latin, with Greek.
2. Latin, with a fuller development of Modern Languages.
3. Latin, with a fuller development of the Sciences.
4. Modern Languages and Science, without Latin.

This last course is intended primarily for those pupils who have not taken Latin during the First Cycle, but is also open to others who, having taken it during that cycle, desire to discontinue it during the Second Cycle.

At the end of the First Cycle, a special course may be instituted, in certain establishments, for devoting increased attention to practical work in Science and to Modern Languages. The Course will be of two years' duration, and adapted to the needs of the locality. The programme of work will be arranged by the educational bodies having immediate jurisdiction, and be subject to the approval of the Minister

The whole reform is extremely valuable to us at the present juncture, furnishing, as it does, a comprehensive declaration on the part of the distinguished French Educational Authorities as to the scope and organisation of Secondary Education. It gives a full reply to the question how to bring the Secondary Schools into due relation with the economic conditions of our civilisation.

The full programmes of subjects and of the hours devoted to each per week are appended.

PREPARATORY DIVISION.

1st Year.

French	9 hours.
Moral Instruction*	.....
Writing	2½ hours.
History—Short Stories	1 hour.
Geography	1½ ,,
Arithmetic	3 hours.
Object Lessons	1 hour.
Drawing	1 ,,
Singing	1 ,,
	20

2nd Year.

French	7 hours.
Moral Instruction*	.....
Modern Languages	2 hours.
Writing	2½ ,,
History—Short Stories	1 hour.
Geography	1½ ,,
Arithmetic	3 hours.
Object Lessons	1 hour.
Drawing	1 ,,
Singing	1 ,,
	20

ELEMENTARY DIVISION.

Eighth and Seventh Classes.

French	7 hours.
Moral Instruction*	.....
Modern Languages	2 hours.
Writing	1 hour.
History and Geography	3 hours.
Arithmetic	4 hours.
Object Lessons	1 hour.
Drawing	1 ,,
Singing	1 ,,
	20

* Given in the French, History, and Geography Lessons.

FIRST CYCLE.

Duration—4 years, from the 6th to the 3rd classes inclusive.

Sixth Class.

Division A.

French	3 hours.
Latin	7 ,,
Modern Languages	5 ,,
History and Geography	3 ,,
Arithmetic	2 ,,
Natural Sciences	1 hour.
Drawing	2 hours.
	23

Division B.

French	5 hours.
Writing	1 hour.
Modern Languages	5 hours.
History and Geography	3 ,,
Arithmetic	4 ,,
Natural Sciences	2 ,,
Drawing	2 ,,
	22

Fifth Class.

French	3 hours.
Latin	7 ,,
Modern Languages	5 ,,
History and Geography	3 ,,
Arithmetic	2 ,,
Natural Sciences	1 hour.
Drawing	2 hours.
	23

French	5 hours.
Writing	1 hour.
Modern Languages	5 hours.
History and Geography	3 ,,
Mathematics	4 ,,
Natural Sciences	2 ,,
Drawing	2 ,,
	22

Fourth Class.

Division A.

Morale	1 hour.
French	3 hours.
Latin	6 ,,
Greek	3 ,, optional.
Modern Languages	5 ,,
History and Geography	3 ,,
Mathematics	1 hr. + 1 hr. optl.
Natural Sciences	1 hour.
Drawing	2 hours.
	22 hrs. + 4 hrs. optl.

Division B.

Morale	1 hour.
French	5 hours.
Bookkeeping	1 hour.
Modern Languages	5 hours.
History and Geography	3 ,,
Mathematics	4 ,,
Physics and Chemistry	2 ,,
Drawing	3 ,,
	24

Third Class.

Morale	1 hour.
French	3 hours.
Latin	6 ,,
Greek	3 ,, optional.
Modern Languages	5 ,,
History and Geography	3 ,,
Mathematics	2 hrs. + 1 hr. optl.
Drawing	2 hours.
	22 hrs. + 4 hrs. optl.

Morale	1 hour.
French	4 hours.
Law	1 hour
Modern Languages	5 hours
History and Geography	3 ,,
Mathematics	3 ,,
Physics and Chemistry	2 ,,
Natural Sciences	1 hour
Bookkeeping	1 ,,
Drawing	3 hours
	24

Pupils taking Greek will be exempt from 3 hours Modern Languages and 1 hour Drawing

SECOND CYCLE.

Duration, 3 years.—From the 2nd to Philosophy Class.

Second Class.

	Section A. Greek, Latin.	*Section B.* Latin, Modern Languages.	*Section C.* Latin, Science.	*Section D.* Science, Modern Languages.
French	3 hours.	3 hours.	3 hours.	3 hours.
Latin	4 ,,	4 ,,	4 ,,	.....
Greek	5 ,,	.....	.....	.....
Modern History	2 ,,	2 hours.	2 hours.	2 hours.
Ancient History	2 ,,	2 ,,	.....	.....
Geography	1 hour.	1 hour.	1 hour.	1 hour.
Modern Languages	2 hours.	7 hours.	2 hours.	7 hours.
Mathematics	1 hour.	1 hour.	5 ,,	5 ,,
Physics and Chemistry	1 ,,	1 ,,	3 ,,	3 ,,
Practical Science work	.....	.....	2 ,,	2 ,,
Drawing	2 hours.	2 hours.	4 ,,	4 ,,
Geology		12 lectures to the four sections.		
	23 hours.	23 hours.	26 hours.	27 hours.

First Class.

	Section A. Greek, Latin.	*Section B.* Latin, Modern Languages.	*Section C.* Latin, Science.	*Section D.* Science, Modern Languages.
French	3 hours.	3 hours.	3 hours.	3 hours.
Latin	5 ,,	5 ,, +2 optl.	3 ,,	.....
Greek	5 ,,	.....	.....	.....
Modern History	2 ,,	2 hours.	2 hours.	2 hours.
Ancient History	2 ,,	2 ,,	.....	.....
Geography	1 hour.	1 hour.	1 hour.	1 hour.
Modern Languages	2 hours.	7 hours.	2 hours.	7 hours.
Mathematics	1 hour.	1 hour.	5 ,,	5 ,,
Physics	1 ,,	1 ,,	.....	.....
Physics and Chemistry	.....	.....	3 hours.	3 hours.
Practical Science work	.....	.....	2 ,,	2 ,,
Drawing	2 hours, optional.	2 hours, optl.	4 ,,	4 ,,
	22 hrs. + 2 opt.	20 hrs. + 4 optl.	25 ,,	27 ,,

Classes of Philosophy and Mathematics.

	Section A. Philosophy.	*Section B.*	*Section A.* Mathematics.	*Section B*
Philosophy	8½ hours.	8½ hours.	3 hours.	3 hours.
Greek—Latin	4 ,, optl.	.....	.....	.....
Latin	.....	2 hours, optl.	.....	.....
Modern Languages	2 hours, optl.	3 ,,	2 hours.	3 hours.
History	3 ,,	3 ,,	3 ,,	3 ,,
Mathematics	2 ,,	2 ,,	8 ,,	8 ,,
Physics and Chemistry	3 ,,	3 ,,	5 ,,	5 ,,
Natural Sciences	2 ,,	2 ,,	2 ,,	2 ,,
Practical Science Work	.....	.....	2 ,,	2 ,,
Drawing	2 hours, optl.	2 hours, optl.	4 ,, (2 optl.)	4 ,, (2 optl.)
Hygiene		12 lectures.		
	18½ hrs. +8 hrs. optl.	21½ hrs. +4 hrs. optl.	27 hrs. +2 hrs. optl.	28 hrs. + 2 hrs. optl

Ornamental drawing is optional.

CHAPTER XVII.

CHAPTER XVII.

Organisation of Secondary Education in France.

Curricula in Lyceums and Colleges.[1]

[G. H. KNIBBS.]

1. *Introduction.*—A careful reading of the three preceding chapters will have revealed to some considerable extent the character of French secondary education. No adequate conception of it is possible, however, without putting in evidence either the whole curriculum, or at least that part of it which governs education after the age of 14 has been reached. This last will be enough, and is what is proposed as the subject-matter of this chapter.

On the other hand, a just appreciation of the curriculum itself, and of the excellence of the French system, involves an accurate estimate of the calibre and efficiency of the teachers and professors who are called upon to give effect to this curriculum. In Chapter V of the Interim Report, page 32, it was pointed out, in reviewing the curricula of various educational systems, that the education of the teacher was a factor of the highest significance, and, indeed, the significance of a curriculum inheres in the teacher whose guide it is intended to be. Obviously it means much or little, according to whether he is competently or indifferently educated. Further than this, the significance of a curriculum, for any of the higher grades of teaching, depends upon the efficiency of the preparation in the schools that lead up thereto, for as the primary school is built on the kindergarten, so is the secondary built on the primary. It has already been shewn that the primary schools of France are well organised, and that their teaching-staff is well-equipped educationally (Chap. XXXV, Interim Report). Hence children enter a secondary school properly prepared to receive its benefits.

The nature of the normal path to higher education, however, will be indicated later. France recognises that the education of the man who proposes to become an artisan, for example, must early be differentiated from that of one who is to become his captain in industry; and the educational system reflects this.

To return to the question of endeavouring to recognise the real character of the secondary educational system of France, it may be pointed out that there is an essential difference between the teaching of any subject, and especially a scientific one, when undertaken by persons who have a merely literary or text-book knowledge thereof, and when undertaken by those who have an experimental and thorough knowledge. This cannot be too vividly kept in view.

It would be wholly misleading to let it be supposed that the teaching in the great lyceums and colleges of France was not of the highest grade. In this State, where there is often an acute difficulty in obtaining a suitable staff of educated teachers, there is a danger, too often resulting in actuality, of accepting the educational services of persons possessing a mere literary knowledge of scientific subjects.

Nothing is easier than to make a *pretence* at teaching, to put a few text-books into the hands of persons wholly unqualified to efficiently use them. As a matter of experience, such persons are not unfrequently quite prepared to talk freely out of the text-book upon things which in reality they have neither seen, recognised, nor understood.

Until a thorough education is widely available, and, indeed, until the traditions—governing higher appointments—of the more highly educated countries are closely followed, this pretence is easy, and the difference between inefficient and *real* teaching may easily pass unperceived.

Teaching of the character that exists in French secondary schools cannot be reached by a mere direction of an administration. It depends upon the excellence of the whole educational system from the "école maternelle" upward. It depends also upon the thoroughness of the professional qualification of the teacher, and upon the directness of his acquaintance with the subject-matter of his teaching.

Secondary education in France, however, is safeguarded against the danger above alluded to, viz., that of accepting mere pretence at scientific teaching for the reality.

It has already been pointed out that the scientific elements of the French teacher's knowledge are laid down in the days of his school-life, and that he has at his disposal every advantage implied in the possession of good working laboratories. The students themselves use those laboratories, and thus their knowledge is realistic. A public that carefully distinguishes between fluent talk about scientific knowledge, and a knowledge of science, will at least ensure the elimination of the scientific pretender from the ranks of the teacher—a not unimportant consideration in the development of an educational system.

Thoroughness in scientific teaching not only ensures *respect* for science, it also secures such advantages in commerce and industry, and, indeed, in all the various walks of life as directly depend upon real scientific knowledge. When, however, unqualified teachers are allowed to teach science; when persons who possess only the merest text-book knowledge of a subject are permitted to be its authorised teachers, then not only is the subject-matter liable to be brought into contempt, but also a general opinion that science is incapable of rendering signal service is likely to arise. This often expresses itself in a belief that the so-called *practical* man is worthy of confidence. From this point of view one sees how important is the excellence which is possible only through thorough qualification for teaching, and how injurious is an improper method of teaching science.

Naturally,

[1] These curricula are now slightly altered from the above. The details as given, nevertheless, shew how well the French youth are, or rather have been, educated.

Naturally, an excellent curriculum presupposes corresponding excellence in teaching. It is hardly sufficient, however, to merely affirm the merit of a curriculum. The difficulty of accepting statements that imply a different state of things from that, which many assert to be true, of this State, demands that the *evidence* should be submitted. The indifference of our own educational system will then stand out in clear relief, and the necessity of progress more boldly appear.

For this reason it has been deemed expedient to translate the synopses of the entire programme of French Secondary Instruction. A careful reading of these synopses and comparison with what is attained at the same age in our own State will, if made without prejudice, shew that in secondary education we are in much the same position as in primary; in other words, we are very far from occupying a high place on the educational ladder of the world.

A feature specially worthy of notice in the French programmes hereinafter set out, is the systematic form of their development. At no point in the programmes are there surprises of advanced material, forasmuch as the earlier stages always anticipate its introduction. The elementary matters in each subject are developed at a suitable stage in the educational career, and are steadily advanced. The pupil's mind thus becomes—quite unconsciously—habituated to systematic views, and the fundamental principles of the various subjects tend in this way to form an integral part, as it were, of his mental furniture.

There is no other efficient system of education than this, viz., one which aims, through a really liberal professional education of the teacher, at securing a competent knowledge of the subject-matter of teaching. Through this alone is it possible to get teachers to teach realistically, experimentally, and with a lively knowledge and intense interest in the whole course of the development of their special subject or subjects.

Regarding the two branches of the curricula, viz., the literary and scientific, it may be said that the professors are almost invariably enthusiastic. On the literary side, their touch with such cognate elements as history and philosophy makes their teaching challenge attention, while their ability to restrict themselves to a limited field powerfully assists them in inspiring their pupils with their own vivid interest. Testimony as to this matter can be had from almost any educated foreigner, as well as from any of our own countrymen who have been educated in the higher grades of Continental schools.

Similarly in regard to the science side. Not only have the professors and teachers all the advantages afforded by well-equipped laboratories, but not unfrequently they are themselves eminent contributors in the realm of scientific research, and thus maintain touch with its most recent developments, to say nothing of the pleasure which it personally affords them.

On carefully reading the curricula hereinafter given, it will be found that a broad conception of every subject is characteristic. Education of this liberal character must inevitably create such a type of educated public as will ultimately ensure an adequate support in every reasonable effort to maintain a high standard for the educational life of the country, and thus make certain the benefits that flow from education. This is one of the most immediate and far-reaching results of good education.

Since the Commissioners were in France, the important changes referred to in the preceding chapter have been made, and, it is said, have been put into force.

2. *General Survey of Curriculum.*—In connection with the lyceums and colleges, there are elementary divisions, consisting of a preparatory class for children of 8 years of age, and two elementary classes for those of 9 and 10 years of age. Then comes a division known as the Grammar Division, for lads of 11 to 13 years of age. After this comes the Higher Division, also lasting three years.

The divisions are as follows :—

	Division Elémentaire.			*Division de Grammaire.*					*Division Supérieure.*
Class	Preparatory	VIII	VII	VI	V	IV	III	II	Rhetoric, Philosophy, Letters, Science.
Commencing Age ...	8	9	10	11	12	13	14	15	16

The classes "Rhetoric" and "Philosophy" are in the classical division, while "Letters" and "Science" are in the modern one.

For the reasons previously stated, the programmes may be translated for classes of from 14 years onward, as an indication of the real nature of the instruction given. To properly understand their connection with the more elementary work, it is necessary to take some account of the earlier teaching. Thus, in the classic and modern schools, the work is as follows :—

Classic.		*Modern.*	
Class VI; age, 11—French	3	French	6
Latin	10		
German or English	3	German	6
History and Geography ...	2	History and Geography ...	3
Zoology	1	Zoology	1
Arithmetic	1½	Arithmetic	2
Drawing	1	Drawing	3
		Writing	1

Classic.		*Modern.*	
Class V; age, 12—French	3	French	6
Latin	8		
		Geography	1
Greek	2		
German or English (or Arabic)	3	German or English	8
History or Geography ...	2	History	2
Geology and Botany	1	Geology and Botany	1
Arithmetic	1	Arithmetic	2
Drawing	1½	Drawing	3

Classic.

	Classic.		*Modern.*	
Class IV; age, 13—French	... ...	2	French	5
Latin	... ...	5		
Greek	... ...	6		
			English or German, Spanish, or Russian, or Arabic. ...	4
German, or English, or Arabic		2	German or English	4
History	... ...	2	History	2
Geography	... ...	1	Geography	1
			Mathematics	3
Geometry	... ...	2		
Drawing	... ...	1½	Drawing	3

These classes qualify for the "Division supérieure" entered on at 14 years of age.

SECONDARY TEACHING—CLASSIC DIVISION.

3rd Class.

French, Latin, and Greek	6 classes of 2 hours per week.
Modern languages	2 hours per week.
History	1 class of 2 hours per week.
Geography	1 hour per week.
Mathematics...	3 hours per week.

2nd Class.

French, Latin, and Greek	6 classes of 2 hours per week.
Modern languages	2 hours per week.
History	1 class of 2 hours per week.
Geography	1 hour per week.
Mathematics...	3 hours per week.

Rhetoric Class.

French, Latin, and Greek	6 classes of 2 hours per week.
Modern languages	3 hours per week.
History	1 class of 2 hours per week.
Geography	2 hours per week during 1 semester, and 1 hour per week during the other semester.
Mathematics...	2 hours per week and 1 lecture (optional) of 1 hour.

Philosophy.

Philosophy	4 classes of 2 hours per week during the entire year, and 1 class of 1 hour per week during a half-year.
History	3 hours per week.
Physics and chemistry	5 hours per week.
Natural history	2 hours per week.
Mathematics...	1 class of 2 hours per week.
Modern languages	1 optional lecture of 1 hour per week.
Hygiene	12 lectures of 1 hour.

II. SECONDARY TEACHING—MODERN DIVISION.

3rd Class.

French	4 hours per week.
German or English language and literature	3 hours per week.
English or German, Spanish, Italian, or Russian language and literature ...	3 hours per week.
History	2 hours per week.
Geography	1 hour per week.
Mathematics...	4 hours per week.
Physics and chemistry	3 hours per week.

2nd Class.

French	5 hours per week.
German or English language and literature	3 hours per week.
English or German, Italian, Spanish, or Russian language and literature ...	3 hours per week.
History	2 hours per week.
Geography	1 hour per week.
Mathematics...	4 hours per week.
Physics and chemistry	4 hours per week.

1st Class (Literature division).

French	3 hours per week.
Philosophy	8 hours per week.
Principles of law and political economy ...	2 hours per week during one semester and 1 hour per week during the other semester.
History	3 hours per week.
History of Civilisation and history of Art...	2 hours per week.
General geography	1 hour per week.
Natural sciences	1 hour per week.
German or English language and literature (optional)	1 hour per week.
English or German, Italian, Spanish, or Russian (optional) language and literature	1 hour per week.
Book-keeping (optional)	1 hour per week.

1st Class

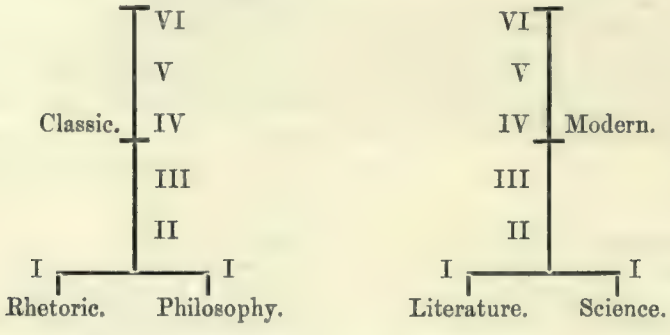
1st Class (Science division).

Mathematics...	6 hours per week.
Physics and chemistry	4 hours per week.
Natural history	2 hours per week.
Philosophy	2 hours per week.
Principles of law and political economy ...	2 hours per week during one semester and 1 hour per week during the other semester.
History	3 hours per week.
General Geography	1 hour per week.
Book-keeping	1 hour per week.
German or English language and literature (optional)	1 hour per week.
English or German, Italian, Spanish, or Russian language and literature (optional)	1 hour per week.

III. THE ELEMENTARY MATHEMATICAL CLASS (Common to both divisions).

Mathematics...	10 hours per week.
Physics and chemistry	6 hours per week.
Natural history	1 hour per week.
Philosophy	2 hours per week.
History	3 hours per week.
Modern languages	1 hour per week.

3. *The Branches of Secondary Education.*—The French system of secondary education is, as has been shewn, dual; that is to say, it has a "classic" and a "modern" side, which may be represented as follows:—

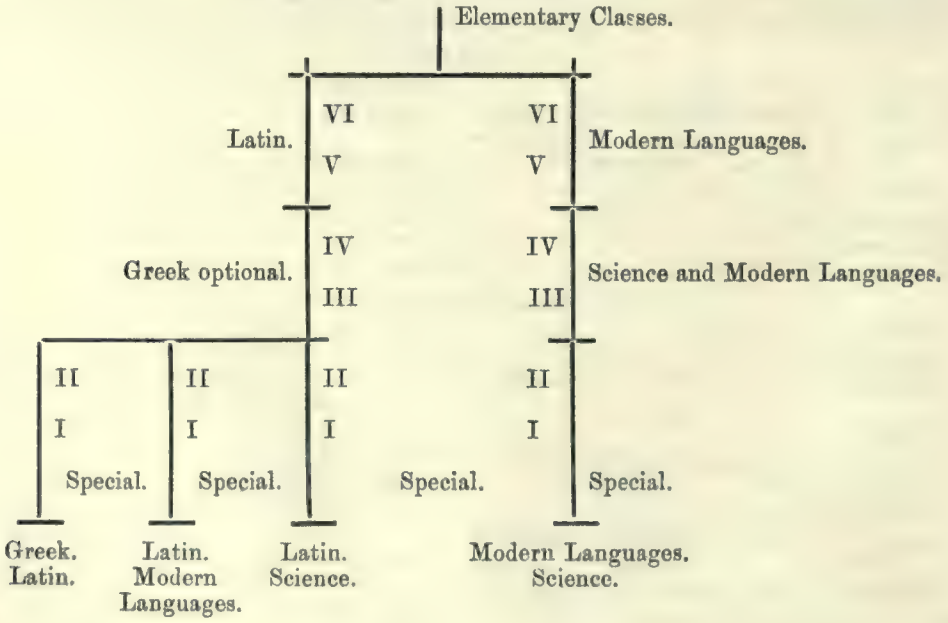


It has also a course in elementary mathematics common to both sides, and it is only in Class I that the teaching subdivides into four groups.

An adequate idea of each may be had by considering the programmes for pupils from 14 years of age onward, the translations of which are given hereinafter.

Sections 4 to 7 deal with the Classic Division, and 8 to 11 with the Modern Division. The authors studied have been quoted because they throw considerable light upon the grade of the teaching, and give a real idea of the age of intellectual maturity of the French schoolboy.

The scheme of October, 1902, replacing the above, must be represented somewhat differently. The following will sufficiently indicate its method of development:—



4. *Details of Curricula, Classic Division, 3rd Class.*—The details of the curricula are as follows, commencing with the classical division, and the 3rd class therein :—

SECONDARY EDUCATION[1]—CLASSIC DIVISION.

"*Division Supérieure.*"

3RD CLASS (14 YEARS).

French, Latin, and Greek, 6 classes of 2 hours a week. Modern languages, 2 hours a week. History, 1 class of 2 hours. Geography, 1 hour. Mathematics, 3 hours. Drawing, 1½ hours.

(4A.) *French* (2 hours per week).

(1.) Recapitulation of the laws which govern the formation of French words; examples and applications.
(2.) Grammatical and literary study of the French language.
(3.) Reading, explanation, and recitation of French authors.
(4.) French compositions.
(5.) Summary ideas of literary history relating to the explained or dictated passages.
(6.) Written and oral analyses of selections from the French poets and prose-writers.
(7.) French verse to revise and to finish.

French Authors.

Selections from the prose-writers and poets of the 16th, 17th, 18th, and 19th centuries. Reading and explanation of the passages taken and of selected pieces.
Descriptive and rhetorical extracts from the prose-writers of the 16th century. Selected plays of Corneille, Molière, and Racine. Boileau: "*Satires et Epîtres.*" La Bruyère: Character sketches. Selected literature of the 17th and 18th centuries. Poetical master-pieces of Lamartine and of Victor Hugo. Chateaubriand: Narratives, scenes, and descriptions. Michelet: Extracts from the history of Middle Ages.

(4B.) *Latin* (5 hours per week).

Latin grammar: recapitulation. Latin prosody. Explanation and recitation of Latin authors. (Great attention will be paid to the preparation and explanation of the passages.) Translation. Exercises.
Summary ideas of literary history relating to the explained or dictated passages.
Written and oral analyses of excerpts from the Latin poets and prose-writers.

Latin Authors.

Narratives (collection of narratives principally from Titus Livius).
Cicero: "Catilinaires," Pro Archia. Sallust. Latin play; extract.
Virgil: "Georgics" (principally the Episodes); Æneid (Books IV to VIII).
Anthology of the Latin poets (omitting works included in the programmes).
Ethical passages and ideas drawn from the Latin authors.

(4C.) *Greek* (5 hours per week).

Recapitulation and continuation of Greek grammar.
Explanation and repetition of Greek authors.
Greek translation. Greek essay. Summary ideas of literary history relating to the explained and dictated texts.

Greek Authors.

Selections from Herodotus. Xenophon: Anabasis. Lucian: Excerpts,—Timon, The Dream, Icaromenippus, Charon. Homer: Odyssey. Ethical passages and thoughts derived from the Greek authors.

(4D.) *Modern Languages* (2 hours per week).

German or English.

Studies of the vocabulary. Explanation and repetition of authors. Fluent reading of easy pieces. Conversational exercises based upon the passages read or explained and on the words learned. Grammatical exercises. Translations and imitative exercises.

Prescribed Authors (German).

Selections—Goethe: Campagne in Frankreich; extracts from the memoirs (Dichtung and Wahrheit). Schiller: Wilhelm Tell; Maria Stuart; "Der Neffe als Onkel."

English.

Pieces selected—Goldsmith: The Vicar of Wakefield. Lamb: Tales from Shakespeare. Macaulay History of England (extracts).

Arabic (in the Algerian Academy).

Course: Literary Arabic.

Recapitulation of the grammatical ideas, emphasising the verbs and the verbal forms. Oral and written exercises. Written translations. Explanation and recitation of an easy author.

Proposed

[1] L'Enseignement secondaire classique.

Proposed Works.

Mouliéras: Manuel algérien. Machuel: Grammaire d'arabe régulier. Houdas: Histoire de Djouder le Pêcheur (an excerpt from the Thousand and One Nights). Mouliéras: Chrestomathie élémentaire d'arabe.

Lecture: Colloquial Arabic.

Conversations; proverbs and idioms. Oral and written constructions of Arabian stories. Oral imitative exercises. Exercises in deciphering manuscripts.

Proposed Works.

Mejdoub: Choix de fables arabes. Allaoua: Recueil de thèmes et versions d'arabe parlé. Houdas: Lettres manuscrites.

(4E.) *History* (one class of 2 hours per week).

History of Europe and of France up to 1270.

The Roman Empire to the end of the 4th century. The Emperor, the prefects, the tax, the city; the great estates; the husbandmen.

Roman civilisation: schools, monuments, customs. Examples taken from Gaul. Comparison of Gaul before the conquest with Roman Gaul. Christianity: the bishops, the councils.

The Barbarians: Customs of the Germans. The Germanic invasion. Alaric. Simple enumeration of the States founded by the Germans. The Huns and Attila. The Goths and Theodoric. The Franks: Clovis. Conquest of Gaul and of a part of Germany. Manners of the Merovingian epoch; Salic law. The kings, the nobility, the bishops; Gregory of Tours. The Frankish regions: Neustria, Austrasia, Bourgogne, Acquitaine.

The Eastern Roman Empire: Justinian. Bysantine manners, the court, the laws; the Church of Saint Sophia.

The Arabs: Mahomet: The Koran; the Arabian Empire; Arabian civilisation.

The Papacy: Gregory the Great; monasteries and missions in the West.

The Austrasian Dukes: Charles Martel. Relations with the Pope. Accession of Pepin the Short.

The Frankish Empire: Charlemagne; the court, the assemblies, the Capitulars, the schools; the army and war; restoration of the Empire.

Louis the Pious. The treaty of Verdun. Dismemberment of the Empire into kingdoms. The Normans in Europe.

Feudalism: Dismemberment of France into great fiefs. The Accession of the Capets.

The feudal regime: homage, the fief, the castle, the serf; the Truce of God; bishops and abbots. Chivalry.

Germany and Italy: The German dukedoms; Henry I; the Marches; Otho I in Italy. New restoration of the Empire.

The Emperor and the Pope. Reformation of the Church. Gregory VII. The quarrel of the investitures. Alexander III and Frederick Barbarossa. Innocent III; Frederick II.

The Crusades: Foundation of the Kingdom of Jerusalem. The taking of Constantinople. Influence of eastern civilisation on the West. Crusades and missions in the east of Europe.

The Towns: Progress of the urban and rural populations in the West. The Communes. Industry, commerce, trade, markets.

French Royalty: The first Capetian kings. The king, his court, his domain; the great vassals.

Louis VI, Louis VII, and Phillip Augustus. Progress of the royal power. Extension of the domain. The reign of St. Louis.

England: William the Conqueror; Henry II. Magna Charta. Parliament.

Christian and Feudal Civilisation: The Church; heresies; mendicant orders; the Inquisition; the Albigenses crusade. The schools; the University of Paris. Literature: Trouveres, Troubadours; Villehardoin, Joinville. The Arts: a castle, a Roman church, a Gothic church.

Recapitulation of the chief facts and general summary of the course.

(4F.) *Geography* (1 hour per week).

Africa, Asia, Oceania: Configuration, surface; sea and coasts; archipelagos and principal islands. Chief features of the relief of the surface; streams, lakes, climates, natural regions. Fauna.

Principal States and European possessions.

The most important agricultural, mineral, industrial productions.

Populations: Indigenous races and immigrations.

Languages and religions. Great historic souvenirs. Great voyages of discoveries.

External commerce. Principal ports. Great ways of communication by land and by sea.

Résumé: The greatest States of the five parts of the world compared. Relations between the five parts of the world. Distribution of the races. Great lines of navigation and of telegraphy.

(4G.) *Mathematical Sciences* (3 hours per week).

Arithmetic: Numeration. Addition, subtraction, and multiplication of whole numbers. Simple theories relative to multiplication. Division of whole numbers. Characters of divisibility by each of the numbers 2, 5, 4, 9, and 3. The greatest common divisor and least common multiple of two or several numbers. Operations on fractions. Decimal fractions. Operations on the decimal numbers; quotient of two whole numbers or decimals to the least decimal unity of a given order. Square. Square root (rule practice). Ratio and proportion.

General Advice.—In this Class, instead of merely familiarising the pupils with practice in computation, as in the preceding Classes, the rules must be demonstrated, limiting everything strictly to the programme.

The

The rules concerning the operations with decimal numbers should be deduced from the rules already established for the operations with ordinary fractions.

In square root, the cases are limited to the extraction of a square root of a whole number or decimal, or at least to a decimal unit of a given order.

Algebra.

Employment of letters to represent unknowns. Simple problems leading to equations of the first degree.
Employment of letters to represent given quantities. Algebraical formulæ.
Employment of positive or negative numbers for the representation of magnitudes susceptible of being taken in one sense, or in the opposite sense; lengths regarded as starting from a point, time, velocities, degrees of heat.
Operations with positive and with negative numbers. Equations of uniform motion.

Geometry.

Proportional lines. Similitude. Relations between the sides of a right-angled triangle. Properties in relation to the circle of the secant lines issuing from one and the same point.
Geometrical constructions. Fourth proportional and mean proportional.
Regular polygons; square, hexagon, equilateral triangle.
Measurement of areas; rectangle, parallelogram, triangle, trapezium.
Relation between the areas of two similar polygons.
Relation of the circumference to the diameter. Area of the circle.

(4H.) *Drawing* (1½ hours per week).

§ (1.) Drawing from fragments of architecture. Decorative figures. Caryatids. Vases ornamented by figures. Ornamented friezes. *Ensemble* and details of the Doric order, of the Ionic order, and of the Corinthian order.
§ (2.) Drawing of the human figure and the figures of animals from engravings and from reliefs. Photographs may not be used as models.

5. *2nd Class of the Classic Division.*—The programme of the 2nd Class of the Classic Division is as follows:—

2ND CLASS (15 years).

French, Latin, and Greek, 6 classes of 2 hours per week. Modern languages, 2 hours. History, 1 class of 2 hours. Geography, 1 hour. Mathematics, 3 hours. Geology, 6 lectures of 1 hour. Drawing (optional) 2 hours.

(5A.) *French* (2 hours per week).

Continuation of previous studies according to the passages read and explained. Explanation and recitation of French authors. French composition. Written and oral analyses of selections from French poets and prose writers. Summary of French literature as far as the death of Henry IV (15 lessons of 1 hour or more, including questions). (The history of Literature in the 2nd Class comprises 35 lessons. The lessons will be 1 hour per week, and the history of Greek, Latin, and French literature are treated in succession.)

Programme of the History of French Literature.

(1.) Structure of the French language, rapid résumé, "Langue d'oc" and "Langue d'oïl." Lyric poetry of Southern France. The Troubadours.
(2.) The "Trouvères." Heroic poems ("Chansons de geste"). The three cycles.
(3.) Old stories and the romance of Renart.
(4.) The romance of the Rose, and allegorical poetry. Lyric poetry of the North.
(5.) Dramatic poetry. "Les Mystères."
(6.) Continuation of dramatic poetry.—"*Farces, Soties, and Moralités.*"
(7.) Prose. The four great chroniclers. Villehardouin, Joinville, Froissard, Comines.
(8.) Rapid aperçu of the 15th century; the 16th century; the Renaissance; the Reformation.
(9) and (10.) Poetry. Clément Marot and his school; Ronsard and the Pléiade.
(11.) The theatre: commencement of the tragedy and of the comedy.
(12.) Prose: its wealth of all kinds. Learned men, philosophers, theologians, politicians, historians, writers of fiction.
(13.) Rabelais, Montaigne.
(14.) The authors of *Mémoires.* The satire Ménippée.
(15.) D'Aubigné, Régnier, Malherbe.

French Authors.

Selections from the prose writers and poets of the 16th, 17th, 18th, and 19th centuries. Reading, and explanation either of the portions read or of the selected passages.
Chanson de Roland. Villehardouin, Joinville, Froissard, Comines, extracts. Chrestomathy of the Middle Ages. Montaigne: principal chapters and extracts.
Poetic masterpieces of Marot, Ronsard, du Bellay, d'Aubigné, Régnier. Selected play from Corneille, Molière, and Racine. La Fontaine: *Fables.* Boileau: *Satires et Epîtres.* Bossuet: *Oraisons funèbres.* La Bruyère: *Caractères.* Selected literature of the 17th and 18th century. J. J. Rousseau: selected passages.
Poetic masterpieces of Lamartine and of Victor Hugo.

Latin

Latin and Greek (9 hours per week).

(5B.) 1° *Latin.*

Exercises on prosody : studies of the principal metres employed by Horace. Explanation and repetition of passages from Latin authors. (Great importance should be attached to the preparation and to the explanation of texts.)

Latin translation. Latin themes and exercises. Summary ideas of the history of Latin literature. (Not more than ten lessons of an hour each).

Programme of the history of Latin Literature.

(1.) Earliest period of Latin literature ; first poetical attempts under the influence of Greece. (2.) The comic poets. (3.) Cicero. (4.) Poetry at the time of Cicero. (5.) The great historians. (6.) The poets of the Augustan Age. (7.) Seneca. The two Plinys. Quintilian. (8.) The epic poets after Virgil. (9.) The satiric poets after Horace. (10.) The last days of Latin literature. Christian literature.

Latin Authors.

Cicero : De Suppliciis, De Signis : Dream of Scipio.

Titus Livy : A book of the 3rd decade. Tacitus : Life of Agricola : Germania. Pliny the Younger : Selection from the Epistles. Latin plays : Extracts. Virgil : Books IX to XIII of the *Æneid*, The *Bucolics*. Horace : *Odes*. Anthology of Latin poets (excluding works comprised in the programmes). Ethical passages and ideas derived from Latin authors.

(5C) 2° *Greek.*

Recapitulation of the grammar. Explanation and repetition of Greek authors. Greek translation. Greek theme. Summary ideas of the history of Greek literature (at most ten lessons each of one hour's duration).

Programme of the History of Greek Literature.

(1.) The earliest poetic traditions of Greece. Homer, Hesiod. (2, 3, 4.) The lyric, tragic, and comic poets. (5.) The historians as far as the 5th and 4th centuries. (6.) The philosophers. (7.) The orators. (8.) The Alexandrian poets. (9.) Græco-Roman literature. (10.) Christian eloquence as far as the 4th century.

Greek Authors.

Xenophon : The *Œconomics*. Plato : *Menexenus, Io.*

Plutarch : Extract from the Lives—Alexander and Cæsar, Demosthenes, and Cicero, Alcibiades and Coriolanus, Pericles and Fabius Maximus.

Homer : The *Iliad*. Euripides : A tragedy (the two *Iphigenias, Alcestes, Hecuba, Hippolytus, Media*).

Ethical excerpts and ideas from Greek authors.

(5D.) *Modern Languages* (2 hours per week).

German or English.

Series of studies of the vocabulary. Explanation and recitations from authors. Fluent reading. Attempts at conversation and at composition based upon the texts read or explained. Exercises and translations.

Prescribed Authors (German).

Selections—Gœthe : "Hermann und Dorothea." Schiller : "Wallenstein" (the three parts). Extracts from historic works. Hauff : "Lichtenstein." Extracts from the German historians.

English.

Selections—Shakspeare : "Julius Cæsar," "Coriolanus." Goldsmith : "The Deserted Village." Walter Scott : A Novel. Dickens : "A Christmas Carol," "David Copperfield." Extracts from English historians.

Arabic (in the Algerian Academy).

Course : Literary Arabic

General revision of the Grammar. Syntax. Oral and written exercises. Written translations. Explanation and recitation of authors.

Works recommended.

Meuliéras' Manuel Algerien. Machuel : Grammaire d'arabe régulier.

Text-book.

Bel Kassem ben Sedira. Cours de littérature arabe.

Lectures : Colloquial Arabic.

Conversation : Proverbs and idioms. Oral and written translations of Arabic stories. Oral exercises in imitation. Exercises in the deciphering of written manuscripts.

Works Recommended.

Mejdoub : "Choix de fables." Alloua : Recueil de thèmes et versions d'arabe parlé. Houdas : "Lettres manuscrites." Recueil de devoirs (lettres) publiés par l' Ecole des lettres d' Alger.

(5E.) *History* (one class of 2 hours per week.)

History of Europe and of France from 1270 *to* 1610.

Europe to the end of the 13*th century* : Empire and Papacy. Principal States.

Royalty in France : Philip le Bel ; new character of government ; the tax and the army ; Parliament ; the "Etats généraux." Struggle against Boniface VIII. Condemnation of the Templiers. Accession of the Valois.

The Hundred Years' War : The armies and the great companies. The "Etats généraux" ; Etienne Marcel : the rising of the French peasants (la Jacquerie). Charles V and Du Guesclin, Paris in the 14th century. Charles VI and the house of Burgundy. Charles VII ; Joan of Arc. Expulsion of the English.

France and England at the end of the Hundred Years' War : Institutions of Charles VII ; standing army ; pragmatique of Bourges. Feudalism. Brittany and Burgundy. Troubles in England : Henry VI.

The Church : The Popes at Avignon ; the great schism of the West : Wycliffe and John Huss : the great Councils.

Anarchy in Germany and in Italy : Accession of the House of Hapsburg ; enfranchisement of the Swiss ; The Golden Bull ; the Hansa. The great towns of Italy : Florence and Venice.

Dismemberment of the Greek Empire and formation of the Ottoman Empire : Slavs and Hungarians ; the Turks ; Mahomet II. Eastern Europe ; Muscovy ; Ivan III.

The States of Western Europe at the end of the 15*th century :* France : Louis XI and Charles the Rash. Charles VIII and Anne of Beaujeu. States of 1484. England ; the Tudors. Spain ; formation of the kingdom. Ferdinand and Isabella.

The decline of the middle ages : Beginning of the Renaissance in Italy : Dante, Giotto, Petrarch, Brunelleschi, Donatello.

The great inventions, and their effect on the general civilisation. Gun-powder, compass, paper, printing. Maritime discoveries : Geographical knowledge to the end of the 15th century ; discoveries of the Portuguese and of the Spaniards ; Christopher Columbus. The routes of commerce ; spices and gold.

European Politics : Wars of Italy ; the Italian States at the end of the 15th century ; the belligerents ; France, Spain, House of Austria. Julius II and Leo X.

The rivalry between the Houses of France and of Austria : Francis I and Charles-Quint ; Henri VIII and Soleiman ; Henri II ; Abdication of Charles-Quint ; Treaty of Cateau-Cambrésis.

The Royal Power in France : The Court at the time of Francis I and of Henri II ; the principal noble families ; the clergy and the compact of 1516 ; the army, justice, finance.

The Renaissance : Arts and letters in Italy ; Machiavelli, Ariosto, Tasso, Leonard de Vinci, Raphael, Michel-Angelo, Titian. Renaissance in the Netherlands and in Germany ; revival of the history of art in the Netherlands ; the Van Eycks ; Erasmus ; Dürer ; Copernicus. Renaissance in France : Cardinal of Amboise ; the College of France ; Rabelais, Ronsard, Montaigne ; the Italians at Fontainebleau ; Jean Goujon and Philibert Delorme ; castles and palaces.

The Reformation : Zwingle, Luther, Calvin ; the peace of Augsburg ; propagation of Lutheranism in the north, of Calvinism in the west ; Henry VIII and Anglicanism.

La contre-réforme : The Council of Trent ; the Inquisition ; the "Société of Jésus."

Political and Religious Wars : Phillip II ; religious policy in Spain and in the Netherlands ; enfranchisement of the United Provinces ; William the Silent ; general aperçu of the policy of Phillip II in Europe ; decadence of Spain.

England : Struggle of Elizabeth against Phillip II ; Mary Stuart. Prosperity of England : Citizenship, trade, marine ; Shakespeare.

France : Catholics and Protestants ; the hospital and the tolerant party ; the Guises, Coligny, Saint-Bartholomew ; Henri III and the League.

Henri IV : Struggle against Spain ; edict of Nantes ; Tully ; reconstitution of the Kingdom.

(*Recapitulation of the great facts and general summary of the course.*)

(5F.) *Geography* (1 hour per week).

Europe.

1. *General Study :* Boundaries and area of Europe ; general configuration ; place of Europe in the ancient world ; description of the principal seas and coasts ; currents ; relief of the land ; principal groups of mountains ; plateaux, plains, and large valleys.

Hydrography : Principal centres of distribution and general direction of the waters ; principal groups of lakes ; the great rivers.

Mean climate of Europe, and mean climate of the principal regions : extremes of cold and heat ; relation between vegetation and climate, and between vegetation and altitude ; examples taken from the most characteristic plants.

The European races, and families of people ; religions and languages.

2. *Description of the States :* Enumeration of the various states with their population, their capitals, their great towns. The characteristic features of the physical and economic geography of each of the principal States ; the elements of public and administrative geography, the historic regions, the great towns.

Résumé : Comparison of the area and population of the principal States ; comparison of their economic power and of their military forces ; great routes of international communication ; relation of Europe with the other parts of the world ; picture of the European colonies.

(5G.) *Mathematical Sciences* (3 hours per week).

Algebra: Recapitulation of the elementary ideas of algebraical calculation given in the third class.
Monomials and polynomials: Addition, subtraction, and multiplication of the polynomials; solution of equations of the first degree of one or several unknowns (explanation of the different methods of the systems of numerical equations).
Application to the solution of some simple problems.

Geometry. Spatial Geometry: Lines perpendicular and oblique to a plane; parallelism of straight lines and planes; dihedral angles; perpendicular planes; conceptions of trihedral angles and polyhedral angles. (Supplementary trihedrals are not dealt with.) Polyhedrons; measures of volumes; parallelipiped prism, pyramid, frustum of pyramid.

(5H.) *Geology* (12 lectures of 1 hour).

(In these lectures the enumeration of the different strata, that of substrata, and of the lists of fossils are rigorously prohibited.[1] The professor shall limit his instruction to the principal features of each of the ages of the earth, to describe the most important living forms, by means of objects placed directly under the eyes of the pupils, of mural plates, of photographs and of drawings executed on the blackboard. Several excursions are indispensible in order to complete the course.)

Summary revision of actual phænomena; comparison with ancient phænomena; eruptive rocks; sedimentary rocks; stratification, fossils.

The primary period: Principal animal forms; brachiopoda; articulata; principal vertebrata; vegetable alluvions; origin and importance of coal.
Distribution of the seas and continents; principal rocks.

The secondary period: Ammonites, belemnites; spread of reptiles; principal birds and mammifera; appearance of flowering plants; distribution of land and sea; extension of coral-reefs; principal rocks.

The tertiary period: Extension of the mammifera; discoveries of Cuvier in gypsum; seas and continents; climate; formation of the great chains of mountains; principal rocks.

The quaternary period: Glacial phænomena; their great extension; erosion of the valleys.
Appearance of man; caverns, lacustrine cities. Fauna; mammoth; rhinoceros; reindeer.
Volcanic phænomena of the tertiary and quaternary periods.

(5I.) *Drawing* (2 hours per week).

(Refer to the programe of class III.)

6. *Rhetoric Class in the Classic Division* 14A.—The first class, as previously stated, has two divisions, viz., that of (i) *Rhetoric* and (ii) that of *Philosophy*. The programmes of each are given :—

RHETORIC CLASS (16 years).

French, Latin, and Greek, 6 classes of 2 hours per week. Modern languages, 3 hours per week. History, 1 class of 2 hours per week. Geography, 2 hours per week during one semester[2], and 1 hour per week during the other semester. Mathematics, 2 hours per week, and one optional lecture of 1 hour. Drawing (optional), 2 hours.

(6A.) *French* (4 hours per week).

Explanation and recitation of authors. Discourses and compositions in French. Literary analyses of French authors. Summary history of the French literature since the accession of Louis XIII (15 lessons of an hour at the most, including the interrogations).

Programme of the History of French Literature.

(1.) Literature under Louis XIII and Richelieu: the "Hôtel de Rambouillet." The French Academy. (2.) The tragedy in the 17th century. (3.) Comedy in the 17th century. (4.) Didactic poetry. The satire. The fable. (5.) The moralists. (6.) The eloquence of the pulpit. (7.) Letters; memoirs. (8.) Montesquieu and Buffon. (9.) Voltaire. (10.) Jean-Jacques Rousseau. (11.) The play and poetry in the 18th century. (12.) General character of the 18th century: the philosophers and men of learning. (13.) Literature during the Revolution and the Empire. (14.) Poetry in the first half of the 19th century. Classics and romances. (15.) Prose in the first half of the 19th century.

French Authors.

Selections from prose-writers and poets of the 16th, 17th, 18th, and 19th centuries. Reading and explanation of textual passages and selections. Principal chapters and extracts from Montaigne. Plays selected from Corneille and Molière. La Fontaine: *Fables.* Boileau: *Epîtres Satires, Art poétique*; extracts from prose works. Pascal: *Pensées*; *Provinciales* (I, IV, XIII, and extracts). Bossuet: *Oraisons funèbres*; selected sermons; extracts from his different works. La Bruyere: *Caractères.* Fénelon: *Lettre à l'Academie*; extracts from the other works. Montesquieu: *Considérations sur les causes de la grandeur des Romains et de leur décadence*; extracts from "*l'Esprit des Lois*" and from the other works. Buffon: Extracts (discourse and general survey.) Voltaire: Extracts from the historical works, and from the other prose works. Diderot: Extracts. J. J. Rousseau: Selections: *Lettre à d'Alembert sur les Spectacles.* Poetical Masterpieces of Lamartine and of Victor Hugo. Selections from the moralists of the 17th, 18th, and 19th centuries. Selections from the principal historians of the 19th century.

(6B.)

[1] Attention is drawn to this case not to burden the undeveloped mind with details that only harass. [2] Half-year.

(6B.) *Latin* (4 hours per week).

Explanation and recitation of Latin authors. Great prominence is given to the preparation and to the explanation of the texts. Latin translation. Latin theme. Latin composition. Literary analyses of Latin authors.

Literary History.

(The master, without entering fully into the history of literature, endeavours, in the explanation of the authors and of the correction of exercises, to make clear the main features of the literature of the principal epochs, and to shew the connection of the great works. He also indicates the place occupied by those of a secondary character).

Latin Authors.

Cicero: Selections from the letters. Pro Milone: Pro Murena: Extracts and analyses of the principal. Discourses: Extracts from the treatises on Rhetoric. Titus-Livy: A book of the third decade. Seneca: Extracts from the Letters to Lucilius, and from the Treatises on Morals. Tacitus, Annals, Histories, Dialogue on Orators. Lucretius: Extracts. Virgil. Horace: Satires and Letters. Lucan: Extracts. Anthology of the Latin poets (excluding works comprised in the programmes).

Ethical thoughts and conceptions derived from the Latin authors.

(6C.) *Greek* (4 hours per week).

Explanation and recitation of Greek authors. Greek translation. Literary analyses of Greek authors.

Greek Authors.

Thucydides: Extracts. Xenophon: Memorabilia. Plato: Extracts. Demosthenes: The seven Philippies; His Discourse on the Crown. Attic orators: Extracts (Lysias, Isocrates, Æschines, Hyperides). Aristotle: Extracts from the Rhetoric. Homer: Iliad and Odyssey. Æschylus: Extracts. Sophocles: A tragedy. Aristophanes: Extracts. Theocritus: Idylls and selections.

Ethical conceptions derived from the Greek authors.

(6D.) *Modern Languages* (3 hours per week).

German or English.

Explanation and recitation of authors. Conversation and reading exercises. Written and oral themes. Free redaction.

Ideas of Literary History, *à propos* of the explained passages.

Prescribed Authors.

German.

Selections—Lessing; *Hamburgische Dramaturgie* (extracts); Goethe; Iphigenie auf Tauris: extracts from the prose works; Lyric Poetry of Goethe and Schiller; Schiller; *Die Jungfrau von Orleans; Die Braut von Messina.* Selections from German ballads.

English.

Selections—Shakespeare: *Macbeth, King Richard III.* Byron: *Childe Harolde.* Tennyson: *Enoch Arden.* Dickens, *Nicholas Nickleby:* George Eliot: *Silas Marner.*

Arabic (in the Algiers Academy).

Elementary notions of Arabic literature. Oral and written exercises. Written translations. Explanation and recitation of authors.

Proposed Work.

Bel Kassem ben Sedira: "*Cours de littérature arabe.*"

Lecture: Colloquial Arabic.

Conversation. Oral and written constructions of Arabian stories. Oral imitative themes. Reading of manuscript literature.

Proposed Works.

Mejdoub: *Choix de fables.* Allaoua: *Recueil de thèmes et de versions d'arabe parlé. Recueil de devoirs (lettres) publiés par l'Ecole des lettres d'Alger.* Houdas: *Lettres manuscrites.*

(6E.) *History* (one class of 2 hours per week).

History of Europe and France from 1610 *to* 1789.

France, from the accession of Louis XIII to the death of Mazarin. The States of 1614. Richelieu: struggle against the Protestants and the Nobility. Growth of the monarchical authority. Navigation and colonies. Minority of Louis XIV; Mazarin; the Fronde.

European Politics: The House of Austria. The Catholics and Protestants in Germany. The Thirty Years' War; interests of the Powers engaged therein; armies and troops; great generals; principal military actions. The Peace of Westphalia and the Peace of the Pyrenees.

England under the Stuarts: The Revolution of 1648. Cromwell. The Restoration.

State

State of Europe about 1660. Decadence of Spain. Prosperity of Holland. Preponderance of the Swede in the North. The Peace of Oliva.

Intellectual Movement: Sciences and Philosophy: Bacon, Galileo, Descartes, Spinoza. Literature: The Spanish influence, Cervantes and Lopez of Vega. The French Academy: Corneille, Pascal. The Arts: Poussin, Le Sueur.

French Society: The "Hôtel de Rambouillet." Misery in the time of the Fronde: Saint Vincent de Paul.

Louis XIV, the Absolute Monarchy: Theory of the King on the royal power. The Court, the Councils, the Secretaries of State; Colbert, Louvois, Vauban. The religious affairs; the declaration of 1682; the revocation of the edict of Nantes.

The politics of Louis XIV. Lionne and Pomponne. War of Holland. Formation of the league of Augsburg.

The Revolution in England: The Stuarts and Parliament; Whigs and Tories. Declaration of rights; Accession of William III.

The Coalitions against Louis XIV: The succession of Spain.

Last years of Louis XIV. The Court: Port Royal; financial distress. The will and death of the King.

The Intellectual Movement: Literature; the great classics. The Arts: Le Brun, Mansart, Le Louvre, Versailles. The sciences.

Commencement of opposition; Fénelon and the Duke of Burgundy. Vauban. Bayle.

Europe about 1715: Western Europe after the treaties of Utrecht and of Rastadt. Eastern Europe after the treaties of Carlowitz, of Passarowitz, and of Nystadt. Peter the Great.

France, from 1715 *as far as the middle of the* 18*th century:* The Regency and the attempts at reform. Law, Fleury, d'Argenson, Machault.

European affairs: Law of the succession of Spain, successions of Poland and of Tuscany. The Spanish Bourbons in Italy. Stanislas Leczinski in Lorraine.

Austria and Prussia during the first half of the 18*th century:* The Prussian State. Frederic II. Maria-Theresa. Wars of the succession of Austria, and the Seven Years' War; general outline of politics. Indication of the principal military operations. Rôle of France in these wars.

Maritime and colonial affairs: Rivalry of France and England in America and in the Indies. The English Empire. Voyages of Discovery.

Eastern Europe: Russia: Catherine II. Conquests in Turkey. Division of Poland.

The end of the Reign of Louis XV: The Parliament. Choiseul and Maupeou.

The Intellectual and Political Movement: Literature and Art, the sciences, the philosophers and economists in France. Books, the Press, the Salons, Parliaments.

Parliamentary Government in England: Kings, Parliament, and ministers; triumphs of the Whigs; political liberties, the Press.

Reform movements in Europe: Influence of French ideas. Charles III in Spain; Pombal in Portugal; Leopold of Tuscany and Beccaria in Italy; Gustavus III in Sweden.

Joseph II in Austria. Frederick II in Prussia. Situation of Prussia in Germany to the end of the reign of Frederick II.

Preludes of the French Revolution: France at the ascension of Louis XVI. Dominant ideas of that epoch; opposition between current opinions and institutions. The attempts at reform: Turgot, Malesherbes, Necker. Financial disorders. The "Etats généraux."

The American War of Independence: The English colonies of America, their revolt. Intervention of France. American Constitution of 1787.

General view of Europe in 1789. Conclusion of the course.

(6F.) *Geography* (2 hours per week during one semester and 1 hour per week during the other).

France: Remarks on its configuration, geological constitution, the relief of its surface, the régime of its waters, the climate. Study of the great natural regions and of the provinces of France. Characteristic features of its orography, hydrography, and economic geography. Manners, traditions, great historical souvenirs. The French nationality. The density of the population. The administrative régime studied, particularly in the "département" and in the commune.

The military organisation. The frontiers. Natural defences and fortified places of France and of the neighbouring countries. Algeria and the protectorate of Tunis. Productive forces; development of colonisation. The French colonies. The American colonies; possessions and establishments of Western Africa, of Eastern Africa; India, Indo-China, French Oceania.

Relation of France to the great countries of the globe. Emigration and immigration; exchanges. International routes of communication. Comparison of the economic and military power of France with that of other States.

(6G.) *Mathematical Sciences* (2 hours a week, and an optional lecture of 1 hour).

Arithmetic: Recapitulation and completion of the arithmetic course of the 3rd Class.

Elementary properties of prime numbers. Square. Square root.

Algebra: Recapitulation of the course in algebra of the 3rd and 2nd Classes. Equations of the first degree with one or more unknowns. Equation of the second degree.

Geometry

Geometry : Recapitulation of the preceding courses.

Cylinder, cone, frustum of cone ; surface and volume.

Sphere. Plane section. Great circles. Small circles. Poles of a circle. Plane tangent. Surface and volume of the sphere.

In the teaching of geometry, the Professor should endeavour to make evident the connection of the propositions. In the resolution of problems, he shall employ the analytical method in preference to the synthetic.

(6H.) *Cosmography* (Ten lessons the maximum).

Celestial sphere. Principal constellations. Diurnal movement. Right ascension and declination. Spherical form of the earth. Determination of longitude and latitude. Radius of the earth. The sun. Apparent movement of the celestial sphere. Ecliptic. The zodiacal constellations. The seasons. The phases of the moon. Eclipse of the moon and of the sun. General description of the Solar System. Planets and their satellites. The system of Copernicus. Succinct details of the different planets. Comets. Shooting stars. Star clusters. Nebulæ.

(6I.) *Drawing* (2 hours per week).

(1°.) Developments and applications of the preceding studies.

NOTE.—Several lessons should be devoted to the study of the head from life.

(2°.) Study of landscapes from engravings.

NOTE.—When circumstances will permit, pupils should have practice in drawing landscapes and buildings from nature.

7. *The Philosophy Class, Classic Division.*—The course for the Philosophy Class, viz, the other branch of the classic division, is as hereunder :—

THE PHILOSOPHY CLASS.

Philosophy : 4 classes of 2 hours per week during the whole year, and 1 class of 1 hour per week during a half year. Modern languages : one optional lecture of 1 hour per week. History : 3 hours. Physics and chemistry : 5 hours. Natural history : 2 hours. Hygiene : Twelve lectures of 1 hour. Mathematics : 1 class of 2 hours. Drawing (optional) : 2 hours.

(7A.) *Philosophy and philosophical authors.* (4 classes of 2 hours per week during the whole year and 1 class of 1 hour per week during a half year.)

Philosophy.

Course of philosophy. Explanation of philosophical authors. Duty :—French dissertation on.

Programme of the Course of Philosophy.[1]

Introduction : Science ; the sciences ; philosophy. Aim and division of philosophy.

Psychology : Aim of phychology ; special character of the facts studied. Psychological and physiological facts.

Method of psychology ; subjective method ; reflection ; objective method ; languages, history, etc. Experimentation in psychology.

Classification of psychological facts : sensibility, intelligence, volition.

Sensibility : Pleasure and pain ; sensation, perception.

The inclinations. The passions.

Intelligence : Acquisition, preservation, elaboration of knowledge. The data of experience, and the activity of the mind. Reason and conscience. Memory. Association. Imagination. Abstraction and generalisation. Judgment and ratiocination. Fundamental sources of knowledge. Can they be explained by experience, association, or heredity ?

The Will : Instinct ; freedom ; habit. The expression of psychological facts ; signs and language. The Beautiful and Art. The relation between the physical and the moral. Madness. Influence of alcoholism on the beginning of madness. Enfeebling of the intelligence and of the will by the use of alcoholic drinks.

Summary of the conceptions of comparative psychology ; man and the animal.

Logic—Formal logic : Terms. Propositions. Different forms of reasoning.

Applied logic : Method of the exact sciences ; axioms, definitions ; demonstration.

Method of the physical and natural sciences ; observation, experimentation ; hypothesis, induction ; classification, analogy, empirical ; definitions. Method of the moral sciences. The testimony of mankind ; the historic method. Errors and sophisms.

Ethics—Principles of ethics : Conscience, the good, duty.

Investigation of the utilitarian doctrines. Responsibility and sanction.

Duty :

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[1] Resolutions of 22nd January, 1885, and 9th March, 1897.

Duty: Duty toward oneself; wisdom, courage, temperance. Damage caused by alcoholism to the race, to the family, to society, and to the country.
Duties to our fellow men, equity and justice; charity.
Special duties to the family. Education.
Duties to our country; obedience to its laws. Education of children. The tax. The vote. Military service. Devotion to our country.
The relation between ethics and political economy. Labour, capital. Property.
Influence of alcoholism on the impoverishment and more often on the misery of the individual and of the family. Effect on the public wealth. The cost of alcoholism to France. Other effects: criminality, suicide, accidents at work.

Elements of Metaphysics: Of the objective value of knowledge; dogmatism, scepticism, idealism. Of the existence of the external world. On Nature in general: various conceptions concerning matter and life. The soul; materialism and spiritualism; God; Providence. The problem of evil. The immortality of the soul. Natural religion.

Summary of the principal philosophic doctrines: Socrates, Plato, Aristotle, Epicurism, and Stoicism, Bacon, Descartes, Lock, Spinoza, Leibniz, Kant.

The order adopted in the progamme is in no way to restrict the liberty of the teacher; it is sufficient if the questions indicated are all treated. Regarding all that concerns the history of philosophy, the master will be free either to teach the matters separately, or to introduce them in the theoretical course, or in the analysis of the text-books, provided he makes his pupils recognise the succession of the schools, and the connection of the ideas.

Philosophic Authors.

The master will select from the list hereunder one Greek, one Latin, and two French authors:—

Greek Authors.

Xenophon: I Book of the *Memorabilia.*
Plato: The *Phædo, Gorgias,* Book VI, VII, or VIII of the Republic.
Aristotle: Book VIII, IX, or X of the Nichomachean Ethics; Book VIII of Politics.
Epictetus: Manual.

Latin Authors.

Lucretius: *De Natura rerum.* Book V.
Cicero: One book of *De Officiis*; one of *Tusculanæ De Republica.*
Seneca: The first sixteen letters to Lucilius.
Bacon: *De Dignitate et Augmentis Scientiarum* (principal chapters).

French Authors.

Descartés: *Discours de la Méthode*; the *Méditations*; the *Principes.* Book I.
Pascal: Opuscules; *Pensées.*
Malebranche: *De la recherche de la verité.* Book II.
Bossuet: *Traité de la Connaissance de Dieu, et de soi-même.* Books I, IV, and V.
Fénelon: *Traité de l'existence de Dieu.*
Leibniz: *Nouveaux Essais* (Book I); the *Théodicée* (extracts); the *Monadologie.*
Condillac: *Traité des sensations.* Book I.
Montesquieu: *Esprit des Lois.* Book I.
J. J. Rousseau: *Contrat social.* Books I and II.
Jouffroy: Extracts.
Auguste Conte: *Cours de philosophie positive.* 1st and 2nd lessons.
Cousin: *Du Bien.*
Claude Bernard: Introduction à l'étude de la médicine expérimentale. 1st Part.
Kant: *Fondements de la Metaphysique des mœurs.*
Stuart Mill: Logic. Volume II, Book VI.

(7B.) *Modern Languages* (an optional lecture of 1 hour per week).

German or English. Exercises in conversation upon the readings.

Authors prescribed.

German.

Selections—Goethe: *Faust,* Part I. Auerbach: *Die Frau Professorin.* Freitag: *Bilder aus der deutschen Vergangenheit* (extracts concerning the 18th and 19th centuries). *Soll und Haben.* Lyric poetry of the 18th and 19th century.

English.

Selections—Shakespeare: *Hamlet.* Macaulay: *Essays.* George Eliot: *Adam Bede, The Mill on the Floss.* Selections of poetry of the 19th century.

Arabic Language (in the Algerian Academy).

(Same programme as previously indicated. A complementary optional lecture should be given, so as to afford the pupils a synoptical idea of the principal kinds of Arabic literature, the Koran and commentaries, grammar, history, geography, literature, and poetry. The chrestomathy of M. Wright is recommended as the best and most complete work).

(7c.) *History* (3 hours per week).

I.

Contemporaneous History (1789 to 1889).

Preliminaries and general causes of the Revolution. The old régime. Arbitrary power and privilege. The Court, the Government and Administration; the taxes, justice, the Army. The three orders.

The Etats généraux and the Constituent Assembly. The "*cahiers.*" The orators of the Assembly. Suppression of the old régime and constitution of a new state of the things.

The European Monarchies about 1789. The Eastern question. The impression produced by the Revolution. Rôle of emigration.

The Legislative Assembly and Convention. Fall of Royalty. Girondins. Montagnards. The clubs. Jacobins. Commune of Paris. Committee of Public Safety. The Reign of Terror. Struggle against Europe, and against internal insurrections. The armies and the generals of the Republic. Treaties of Basel. The spirit of the reforms of the Convention. Constitution of the year III.

The Directorate. Campaigns of Italy and Egypt. New coalition. The "*Coup d'Etat.*" The eighteen Brumaire.

The Consulate and the Empire. The Constitution of the year VIII and its transformations as far as 1807. Spirit of the institutions of the Consulate and the Empire. The Codes; the Concordat; the Legion of Honour; the Imperial Court. The nobility of the Empire. The University. The financial institutions. Public Works. Wars as far as 1807; the Great Army; the generals of the Empire. The Continental blockade. The beginning of national resistance. Character of the Spanish War and of the war of 1809. State of the Empire and of Europe about 1810. Character of the Imperial power. Struggle against the Pope. Later struggles;—Moscow; the Battle of Leipzig. The invasion. Waterloo and Saint Helena. The Congress of Vienna; character of its work. Europe in 1815.

II.

The Holy Alliance and the People. Absolute power and the Parliamentary régime. The charter of 1814 in France. The parliamentary régime under Louis XVIII. Principal orators and statesmen. Charles X. The congregation. The Congress. Struggle against the new spirit in Italy, in Spain, and in Germany. Instructions and interventions. Enfranchisement of Greece. Politics of France. The taking of Algiers. The Revolution of 1830.

Intellectual progress from the end of the 18th century. France, England, and Germany. Revival of German and English Literature. Character of French Literature under the Empire. Foreign influences. Romanticism. Literary criticism. Development of learning. Restoration of a knowledge of the East, of classic antiquity, and of the Middle Ages. Archæology and the great discoveries. History. Renaissance of the classic spirit in Art during the Revolution and the Empire. Romanticism in Art. Symphonic and dramatic music. Development of the exact sciences, physics, and natural history. Applications—Steam, electricity. Progress of industry.

Louis-Phillippe. The new Charter. Principal orators and statesmen. The parties; the secret societies. Effect produced by the Revolution of 1830 in Europe: Belgium, Poland, Spain. The Eastern question. Character of the foreign policy of Louis-Phillippe. Conquest of Algeria.

III.

Revolution of 1848. Cause of the Revolution in France. The Electoral Question. The Republic of 1848. *Contre-coup* in Europe.

Changes in the Government of France since 1848. The Constitution of 1852 and the Second Empire. The Republic. Constitutional Laws of 1875.

The Foreign Policy.—Development of Italian unity; war of 1859. The Kingdom of Italy. Development of German unity: Italo-Prussian war against Austria. New Constitution of Germany, of Austro-Hungary. War of 1870–1871; the invasion, the Siege of Paris; the struggle in the province. The German Empire. The stipulations of the Treaty of Frankfort. The Eastern Question. The Crimean and Balkan wars. Panslavism. England and Russia in Asia.

England: Principal statesmen and great reforms of the 19th century. Ireland.

The New World: Development of the principal States of South America. Extension of the United States of North America.

IV.

Development or Transformation of the Principles of 1789.

Political Liberty: Constitutional régime: principal forms of government at present existing.

Religious liberty: Freedom of worship, suppression of State religions.

Respect for the Human Personality: Abolition of slave-trade, of slavery, of servitude.
Democratic ideas and social questions. Universal suffrage. Popular instruction. Obligatory military service. Socialism in organisation of labour.

Intellectual Movement: The spirit of observation in literature and art. Learning. The sciences.

Industry and Commerce: Extension of the use of steam and of electricity. Multiplication of the routes of communication throughout the world. Protection and free-trade. Commercial treaties and international conventions. Universal exhibitions.

Expansion of European Civilisation: Explorations. Distribution of the principal European languages on the face of the globe. Résumé of the rôle of France in political, social, and intellectual history since 1789.

Physics and Chemistry (5 hours per week).

(7D.) 1° *Physics.*

Gravity. Equilibrium of Liquids and Gases: Various states of matter. Principle of inertia. Force. Enunciate, without demonstration, the rule of the parallelogram of forces and of that of the composition of two parallel forces. Direction of gravity. Centre of gravity, weight. Balance. Free surface of liquids in equilibrium. Equality of pressure in every direction. Pressure on walls. Communicating vessels. Principle of Archimedes. Application to the measure of specific weight: areometers of constant weight. Atmospheric pressure. Barometer. Law of Mariotte; experiments of Mariotte. Air pump. Pumps. Hydraulic press. Syphon. Aërostats.

Heat: Dilatation of bodies by heat. Thermometer. Maximum density of water. Definition of specific heat. Principle of the method of mixtures. Fusion. Solidification. Solution. Crystallisation. Heat of fusion (simple definition). Evaporation. Saturated and non-saturated vapours. Maximum tension.

Definition of the hygrometric state. Rain, snow, dew.

Evaporation, ebullition, distillation. Heat of vaporisation (simple definition). Production of cold by evaporation.

Conductivity.

Acoustics: Production of sound. Propagation. Velocity in air and in water. Reflexion. Echo. Intensity; pitch. Vibrating strings; law of length. Principal musical intervals. Harmonics. Timbre.

Electricity. Magnetism: Production of electricity by friction. Electrification by influence; gold-leaf electroscope; electrophorus; electrical machine. Condensers. Leyden jar; batteries. Thunder. Lightning-conductor. Voltaic pile. Daniell and Bunsen cells. Electric current. Physiological, physical, and chemical effects of the cell. Electrotyping; gilding, silver-plating. Natural and artificial magnets. Definition of declination and inclination. Experiment of Œrstedt. Galvanometer. Action of currents on currents. Action of the earth on a closed current, movement about a vertical axis; astatic conductors. Solenoids: composition of a solenoid and magnet. Magnetisation by currents: electro-magnets. Principle of the electric telegraph. Induction by currents and magnets. Ruhmkorff coil. Telephone. Principle of magneto-electric machines.

Optics: Rectilinear propagation of light. Velocity. Laws of reflexion. Plane mirrors. Spherical, concave and convex mirrors. Refraction. Prism. Lenses (experimental study).

Magnifying-glass. Principle of the astronomical telescope, of the microscope and telescope. Decomposition and recomposition of light. The solar spectrum. Spectra of different luminous sources. Radiant heat. Photography.

Complements: Law of the fall of bodies. Atwood's machine. Pendulum. Applications, Work. Vital force. Energy.

Definition of the mechanical equivalent of heat. Principle of the steam-engine: condenser expansion engine.

(7E.) 2° *Chemistry.*

Simple and compound bodies.

Analysis and synthesis of water. Hydrogen. Oxygen.

Air: Analysis. Nitrogen. Combustion. General ideas of chemical combination. Heat liberated. Change of properties. Principles of chemical nomenclature and notation. Acids, bases. Nitrogen oxides, nitric acid, ammonia.

Laws of combinations by weight and volume. Chlorine, hydrochloric acid, nitro-hydrochloric acid. Iodine. Sulphur.

Sulphurous acid. Sulphuric acid. Hydrosulphuric acid.

Phosphorus. Phosphoric acid. Phosphoretted hydrogen.

Carbon. Carbonic acid. Carbon monoxide. Carbon disulphide.

Cyanogen and hydrocyanic acid. Hydrogen carbides. Acetylene.

Olefiant gas. Marsh gas. Benzene. Coal-gas. Flame. Silica.

General facts concerning the metals and their oxides and salts.

General facts concerning organic bodies, from the point of view of their extraction from living things and their artificial formation.

(7F.) *Natural History* (2 hours per week).

Anatomy and Physiology of Animals and Plants.

The histological developments in the anatomy and physiology of animals and plants, and in particular all questions relating to the structure of organs will be given, only in so far as they serve to explain the physiology.

General characteristics of living beings. Animals and plants.

Animal anatomy and physiology. General characteristics of animals; principal tissues.

(I.) *Functions of Nutrition* (special study of man).

Digestion: Digestive apparatus; foods; mechanical and chemical phænomena of digestion.
Circulation: Blood, apparatus for the circulation of the blood; mechanism of the circulation; lymph and the thoracic canal. Absorption.
Respiration: Respiratory organs; mechanical; physical and chemical phænomena. Animal heat. The excretory organs; kidneys, glands of the skin; the liver and its functions.
Summary of ideas on the organs of circulation and respiration in the animal series.

(II.) *Functions of relation* (special study of man).

The sense organs: The eye, vision, accommodation. Some words on the anomalies of sight. The ear, hearing. Smell, taste, and touch. The larynx: the voice. The motor apparatus: bone, skeleton, articulations. Muscles: their structure and functions. The nervous centres: their functions. Motor and sensary nerves.
Principal modifications of the apparatus of relation in the animal series.

(III.) *Summary of the conceptions of palæontology:* Animals of the primary period. Development of the invertebrata: trilobites; insecta from coal; primitive fish.
Animals of the secondary period: ammonites and belemnites.
Development of the cold-blooded vertebrata. The earliest birds.
The animals of the tertiary and quaternary periods. Development of the warm-blooded vertebrata. Their correspondence with the present types.
History of the horse. Man.

Anatomy and physiology of plants. General characters of plants. Principal tissues.

(I.) *Nutrition.* (Special study of a phanerogamic plant.)

Root Radicles. Growth and uses of the root. The stem: Growth and uses of the root. The Stem: Growth and function of the stem. Leaf: Its structure, development, and functions. Nutrition in general: Plants with chlorophyl and without it. Nutritive reserves. Respiration.

(II.) *Reproduction.* (Special study of a phanerogamic plant.)

Flower; floral envelopes. Stamen, anther, pollen; carpels, ovule. Fecundation and development. Fruit and grain. Germination; accompanying phænomena. Cryptogams; reproduction and alternate forms. Parasitism.

(7G.) *Hygiene.* (Programme modified by order of 9th March, 1897.) (Twelve lectures of one hour each.)

Water. Various potable waters: spring, river and well water. Spring water alone is pure; all the others can be contaminated; modes of contamination. Methods of purifying potable water: filtration and boiling.

The Air. The amount of air necessary in dwellings, etc. Dangers of confined air. Renewing of air. Ventilation. Vitiation of the air by dust and gas. Neighbourhood of marshes.

Foods. Principal adulterations of common foods, solid and liquid. Dangerous meats: parasitism and infectious germs (trichinosis; leprosy, anthrax, tuberculosis): putrified meats (poisoning produced by pork, by sausages).
Alcoholic drinks. Fermented drinks; cider, beer, wine.
Physiological action of fermented liquors. Pathological effect of their abuse. Distilled liquors: brandy. Pathological effects of their habitual usage. Alcoholic drinks with the addition of essential oils. Absinthe and other professedly aperient and digestive liqueurs. Serious pathological effects of their use.
Drunkenness and alcoholism. Influence of alcoholism on the race (hereditary diseases).
Contagious diseases. When is a disease contagious or infectious? Example: a type of disease, the transmission of which is experimentally easy. Anthrax, experiments of Pasteur.
Rapid sketch of the principal contagious diseases of mankind; means of transmission: air, water, respiratory apparatus, digestive apparatus. Ringworm, itch, eruptive fevers, small-pox, measles, scarlatina, tuberculosis.

Vaccination. Revaccination. Mortality by small-pox.
Measures for safeguarding against. Prophylaxis. Disinfection. Personal cleanliness.
Conditions of good sanitation in the house. Hygienic and unhygienic houses. Diseases transmitted through human excreta, typhoid, cholera. Notions regarding sanitary police for animals. Diseases transmissible to the human being; hydrophobia, glanders, anthrax, tuberculosis.
Slaughtering and burial (law of 21st July, 1881, regarding sanitary police for animals).

(7H.) *Mathematics* (2 hours per week).

Recapitulation of the preceding course.

(7I.) *Drawing* (2 hours per week).

(See the programme of the rhetoric class before given in sect. 6 herein. (6I.)

This closes the programme for the "classical" division, and we now turn to the "modern" division of secondary education.

8. *Modern Division of Secondary Education.*[1] *Third Class.*—Some subjects in the modern division are naturally identical with some in the classical division. In general these will not be repeated. A note referring to the classical division will, after all, be quite sufficient. The following is the programme:—

SECONDARY EDUCATION—MODERN DIVISION.

"*Division Supérieure.*"

3rd Class (14–15 Years).

French, 4 hours per week. German or English Language and Literature, 3 hours. English or German, Spanish, Italian, or Russian Language or Literature, 3 hours. History, 2 hours. Geography, 1 hour. Mathematics, 4 hours. Physics and Chemistry, 3 hours. Geology, 12 lectures of 1 hour. Drawing, 3 hours.

(8A.) *French Language and Literature* (4 hours per week).

Grammatical and literary study of the French Language.

Ideas concerning the principal features of Style and the essential rules of Composition, studied not in a merely theoretical manner but from texts, and with reference to daily tasks.

Synopsis of the history of French Literature as far as the death of Henri IV (15 lessons of one hour at the most, including the interrogations). Explanation, recitation, reading and analysis of French authors. Reading and analysis of selected translations. Literary compositions and exercises of various kinds. Narratives, discourses, dialogues, sketches, development of thought in regard to literature, ethics, history, etc.

Texts for Explanation and Recitation.

Montaigne extracts.

Boileau: *Epitres.* Bossuet: *Oraisons funèbres.* La Bruyère: *Caractères.* Molière: *Les Précieuses ridicules; les Femmes savantes.* Literary selections of the 17th century. Rousseau: prose extracts. A collection of selected pieces from the Middle Ages to the 17th century. Collections of selections from the prose-writers and poets of the 19th century.

Books for Reading and Analysis.

Æschylus, Sophocles, Euripides (selections).

Plautus, Terrence. Selections—Cæsar; Bossuet: *Histoire universelle,* 3rd part. Montesquieu: *Considérations sur les causes de la grandeur des Romains et de leur décadence.*

Collections of excerpts from foreign literature (translations).

Foreign Languages and Literatures.

(8B.) *German or English* (3 hours per week).

English or German, Spanish, Italian, or Russian (3 hours per week).

Arabic (in the Algiers Academy).

German, English, and Italian languages and literatures.

Continuation of the exercises of the preceding year.

Study of the vocabulary. Oral reproduction of readings and recitations in class. Explanation and recitation of authors. The explanation will take on a more literary character than in the preceding class; selections will be made from time to time which will give opportunity for comparisons with French literature. Fluent reading of easy passages. Conversational exercises on read or explained texts, and on words learned. Methodical study of the various parts of the discourse. Oral and written themes; grammatical themes. Dictated translations; imitative themes. Very simple essays in composition, recitations, descriptions, familiar letters, etc. Notions of literary history referring to the authors explained.

German Authors.

Selections—Goethe: *Campagne in Frankreich;* extracts from the memoirs (*Dichtung und Wahrheit*). Schiller: *Wilhelm Tell; Maria Stuart; Poésies lyriques.* Kotzebue: *Die deutschen Klienstädter.*

English Authors.

Selections from Goldsmith: She Stoops to Conquer; The Vicar of Wakefield. Lamb: Tales from Shakespeare. Macaulay: Essays (extracts). Cox: The Gods and the Heroes.

Italian Authors.

Zirardini (Guiseppe): *Fiore de letture Italiane,* prose and verse. Silvio Pellico: *Le mie Prigioni.* Gaspare Gozzi: *Ragionamenti e dialoghi di morale e di critica letteraria,* for the secondary schools.

Spanish Language and Literature.

Continuation of the exercises of the preceding year.

Classification of verbs; complete conjugation of the regular verbs.

Classification of the irregular verbs. Formation and employment of the present and past participles. Rôle of the gerundive in Spanish. Formation of the simple and compound tenses.

Continuation of the elementary grammar. Analogy of and difference between the French conjugation and the Spanish conjugation.

Numerals. Principal adverbs. Adverbs in *mente.* Analogy and difference in their formation and employment with the French adverbs in *ment.* Graduated exercises in reading and conversation. Dictations. Easy passages in prose and verse learned by heart. Oral and written imitative themes from the known texts. *Spanish*

[1] L'enseignement secondaire moderne.

Spanish Authors.

Selections from prose and poetry. Collection of fables of Yriarte and Samaniego. Diego de Mendoza : *Guerra de Granada.* Antonio de Solis : *Historia de la conquista de Mejico.* Don M. J. Quintana : *Vidas de Españoles celebres.*

Arabic (the Algiers Academy).

Literary Arabic.

Recapitulation of the ideas of grammar, emphasising the substantives and pronouns. Oral and written themes. Written translations. Explanation and recitation of authors.

Proposed Works.

Mouliéras : Manuel algérien. Machuel : Grammaire d'arabe regulier.
Texts—Mouliéras : Chrestomathie élémentaire d'arabe régulier.
Machuel : Histoire de Sindbad le Marin.

Colloquial Arabic.

Conversation ; proverbs and idioms. Oral and written constructions of Arabian stories. Imitative oral themes. Exercises in deciphering and reading manuscripts.

Proposed Works.

Mejdoub : *Choix de fables.* Allaoua : *Recueil de thèmes et de versions d'arabe parlé.* Houdas : Lettres manuscrites.

(8c.) *History* (2 hours per week).

History of Europe and France from 1270 *to* 1610.

The programme in History is absolutely identical with that previously given in Section 5e herein

(8d). *Geography* (1 hour per week).

Europe. 1° *General Study.* Boundaries and areas of Europe.
General configuration. Place of Europe in the ancient world.
Description of the principal seas and coasts. Currents.
Relief of the land. Principal groups of mountains, plateaux, plains, and large valleys.
Hydrography : Principal centres of distribution and general direction of the waters. Principal groups of lakes. The great rivers.
Mean climate of Europe and mean climate of the principal regions.
Extremes of cold and heat. Relation between vegetation and climate, and between vegetation and altitude. Examples taken from the most characteristic plants.
The European races and families of peoples. Religions and languages.
2° *Description of the States.*—Enumeration of the various States with their population, their capitals, their cities.
The characteristic features of the physical and economic geography of each of the principal States ; the elements of political and administrative geography, the historic regions, the cities.
3° *Résumé :* Comparison of the area and population of the principal States ; comparison of their economic power and of their military forces. Great routes of international communication. Relation of Europe with the other parts of the world. Picture of the European colonies.

(8e). *Science.*

The course in science is never prescribed. The master may, if he thinks fit, put into the hands of the pupils a text-book or an autographic text so as to relieve him from personally developing every part of the course.

(8f). *Mathematics* (4 hours per week).

Theoretical Arithmetic : Numeration. Addition, subtraction, and multiplication of whole numbers. Theorems relating to multiplication. Division of whole numbers. Characters of divisibility by each of the numbers 2, 5, 4, 9, and 3. Remainder of the division by each of these numbers. The greatest common divisor of two numbers. Elementary properties of prime numbers. The greatest common divisor and the least common multiple of several numbers. Operations on fractions. Decimal fractions. Quotient of two whole numbers or decimals to the least decimal unity of a given order. Square and square root.
Geometry : Proportional lines.—Lines parallel to one of the sides of a triangle divides the two other sides into equal parts. The reciprocal of this. Properties of the bisections of a triangle. Geometrical locus of points are the relation of the distances therefrom to two fixed points is constant. Theory relative to the secants of a circle issuing from one and the same point. Metrical relations in the right-angle triangle. Metrical relations in any triangle whatsoever. Problems : Divide a given straight line into equal parts, into parts proportional to given lengths. Fourth proportional. Mean proportional.
Regular polygons : Square, hexagon, equilateral triangle. Length of an arc of a circle. Relation between the circumference and the diameter. Calculation of π.

Areas

Areas of polygons and circles: Measure of the area of a rectangle, of the square, of the parallelogram, triangle, trapezium, of any polygon whatsoever. Applications and problems. The square constructed on the hypothenuse of a right-angled triangle is equal to the sum of the squares constructed on the sides of a right-angle. Relation between the areas of two similar polygons. Area of a regular convex polygon. Area of a circle, of a sector, of a segment. Relation between the areas of two circles. Ideas on surveying. Usage of the chain and the cross-staff in land surveying. Ideas on the making of plans. Surveying with metre, cross-staff, graphomètre, the plane-table.

Algebra: Employment of letters. Algebraic formulæ. Problems leading to numerical equations of the first degree. Numerous examples. Introduction of negative numbers. Examples: Position of a point on an axis; formulæ of uniform motion. Operations with negative numbers. Algebraical fractions. Extension of the properties demonstrated in arithmetic. Monomials and polynomials. Similar terms. Addition, subtraction and multiplication of polynomials. Solution of equations of the first degree of one unknown; of numerical equations of several unknowns. Different methods of solution. Equational problems; solution of equations. Numerical inequalities of the first degree of one unknown.

Physics and Chemistry (3 hours per week).

In the demonstration of scientific truths, the professor shall take the opportunity to expound the methods and history of the discoveries in science.

(8G) 1° *Physics. Weight. Equilibrium of liquids and gases.*

Various states of matter. Direction of gravity. Plumb-line. Centre of gravity. Weight. Balance. Specific weight (definition). Free surface of liquids in equilibrium. Experimental study of the pressure on the bottom and sides of vessels. Communicating vessels. Hydraulic press, wells, artesian wells. Principle of Archimedes. Atmospheric pressure. Barometer. Mariotte's law. Law of the mixture of gases. Air pump. Pumps. Syphons. Aërostats.

Heat.

Dilatation of bodies by heat. Thermometers. Definition and use of coefficients of dilatation.

Maximum density of water. The conductibility of bodies by heat. Definition of the specific heat of solids and liquids. Principle of the method of mixtures. Refrigerant mixtures. Evaporation. Formation of vapour *in vacuo*. Saturated and non-saturated vapours. Maximum elastic force. Mixture of gas and vapour. Definition of the hygrometric state. Evaporation. Ebullition. Distillation. Heat of evaporation.

(8H.) 2° *Chemistry.*

Metalloids.

Water. Analysis and synthesis. Hydrogen. Oxygen. Air analysis. Nitrogen. Combustion.

Various states of matter. General ideas on chemical combinations. Simple and compound bodies. Acids, bases, salts. Nomenclature as written and spoken. Oxides of nitrogen. Nitric acid. Ammonia. Chlorine. Hydrochloric acid. Iodine. Bromine. Hydrofluoric acid. Sulphur. Sulphurous acid. Sulphuric acid. Hydro-sulphuric acid.

Phosphorous. Phosphoric acid. Phosphoretted hydrogen. Carbon. Oxide of carbon. Carbonic acid. Carbon disulphide. Acetylene. Marsh gas. Olefiant gas. Boric acid. Silica.

Practical Chemistry.

Practice with metalloids (20 hours).

Hydrogen. Oxygen. Nitrogen. Protoxide of nitrogen. Nitrogen dioxide. Nitric acid. Ammonia. Chlorine. Hydrochloric acid. Potassium chlorate. Sulphur. Sulphurous acid. Hydro-sulphuric acid. Sulphuric acid. Phosphoric acid. Iodine. Extraction of bromine. Carbon monoxide. Carbonic acid. Animal charcoal. Soot. Preparation of carbon disulphide. Coal gas. Boric acid. Silicic acid.

(8I.) *Drawing* (3 hours per week).

Freehand.

Drawing from the fragments of architecture, such as crests, masks, griffins, vases, decorative heads of animals, etc.

Drawing of the ensemble of the human figure from the bas-reliefs borrowed from antique art.

Study and drawing of parts of the human body. Simple elementary notions of anatomy.

Copy of details of the human figure, alternatively from the relief and from engravings.

Geometrical Drawing.

Ordinary shadows and the practical rationale of shading (the object, and the shadows cast by objects). Shading of the most simple surfaces of revolution.

Drawing and shading of architecture. Ensemble and details of the Ionic Order—door or window. (These studies of architecture will be made from the monuments of Greek and Roman art.)

Drawing and shading of machines. The most simple parts of machines. Elevation, with sketches of these parts and their geometrical representation to a definite scale. Some of these drawings should be shaded.

Certificate of Studies.

On leaving the Third Class, the pupils may receive a "Certificate of studies" if they are deemed worthy of it; this certificate will contain the *résumé* of their notes and indicate the rank they occupied in their class; it is delivered by the chief of the establishment after consultation with the professors, under the control of the academic authority.

9. *Second Class, Modern Division.*—The programme in the second class of the modern division of secondary education is as follows —

SECOND CLASS (PUPILS FROM 15 TO 16 YEARS OF AGE ON THE AVERAGE).

French, 5 hours per week. German or English language and literature, 3 hours. English or German, Spanish, Italian, or Russian language and literature, 3 hours. History, 2 hours. Geography, 1 hour. Mathematics, 4 hours. Physics and Chemistry, 4 hours. Drawing, 3 hours.

(9A.) *French language and literature* (5 hours per week).

Summary history of French literature from the accession of Louis XIII till 1789. (Fifteen lectures of one hour at the most, including interrogations).

Explanation, recitation, reading, and analysis of French authors. Reading and analysis of selected translations. French composition of various kinds: Narratives, discourses, dialogues, sketches, development of thoughts (literature, ethics, history, etc.).

Text-books for Explanation and Recitation.

Corneille: *Cinna, Polyeucte.* Racine: *Athalie, Britannicus, Andromaque.* Pascal: Selections from the *Pensées.* Bosseut: Selected sermons and extracts from the other works. Molière: *Le Misanthrope, Tartufe.* La Fontaine: *Fables* (Books VII to XII). Voltaire: Extracts from his prose works. Literary selections from the 18th century. Collection of excerpts (from the Middle Ages to the 18th century). Collection of excerpts from the prose writers and poets of the 19th century.

Books for Reading and Analysis.

Selections from: Æschyles, Sophocles, Euripides, Aristophanes, Cicero (treatises, discourses, letters), Seneca, Tacitus, Fénelon; *Lettre à l'Académie*, Saint Simon: Extracts. Buffon: *Epoques de la Nature.* Diderot: Extracts. Michelet: Extracts. Collection of excerpts from foreign literature (translations.

(9B.) *Foreign Languages and Literatures.*

German or English (3 hours per week).

English or German, Spanish, Italian, or Russian (3 hours per week).

Arabic (in the Algerian Academy).

German and English Languages and Literatures.

Continuation of the exercises of the preceding year.

Series of studies in the vocabulary, with corresponding oral exercises. Explanation and recitation of authors. *The explained texts are criticised as far as possible in the foreign language.*

Fluent reading. Oral reproduction of readings or recitations in class.

Oral and written themes. Translations. Essay-writing and translation in this class should partake of a more literary character. Composition on the texts read or explained. Methodical study of syntax. Formation and composition of words. Ideas on prosody. Notions of literary history in chronological order.

German Authors.

Lessing: *Dramaturgie* (extracts). Goethe: *Hermann et Dorothea.* Schiller: *Wallenstein* (the three parts), *Die Jungfrau von Orleans* (the first three acts). Extracts from historic works. Kleist: *Michael Kohlhaas.* Heine: Selections from prose and poetry. Lyric poems of Goethe. Selections from historic and geographical readings.

English Authors.

Shakspeare: *Julius Cæsar, Coriolanus.* Milton: Extracts. Walter Scott: A Novel. Byron: *Childe Harold.* Dickens: *A Christmas Carol, David Copperfield.* Longfellow: Extracts. Extracts from English travellers, historians, and economists.

Italian Language and Literature.

Continuation of the exercises of the preceding year.

Series of studies on the vocabulary, with corresponding oral exercises. Explanation and recitation of authors. The explained texts are criticised as far as possible in Italian. Fluent reading.

Oral reproduction of readings and recitations in class. Oral and written themes. Translations. In this class, the theme and translation exercises should take on a more and more literary character. Compositional attempts on the passages read or explained. Methodical study of syntax. Idioms, exclamations. Augmentatives, diminutives. Polished forms.

Formation and composition of words. Ideas on prosody.

Difference between poetical and prose language.

Summary of the history of Italian literature.

Italian Authors.

Zirardini: *Fiore di letture italiane.*

Guicciardini (Fr.): *Ritratti, allocuzioni e pensieri*, drawn from his *Storia d'Italia.* Machiavelli: *Discorsi sopra la prima Deca di T. Livio*, abbreviated for the use of the higher classes. *Libro dell' arte della guerra*, Domenico Carbone edition.

Ariosto: *Orlando furioso*, for the young. By l'Abbé Avesani.

Torquato Tasso: *Gerusalemme liberata*, Domenico Carbone edition.

Spanish

Spanish Language and Literature.

Continuation of the exercises of the preceding year.

Extension of the knowledge of the vocabulary. Construction of the Spanish phrase. Place of various complements. Reading exercises. Explanation and recitation of authors. Conversations on the selected readings and the explained texts. Oral themes; written themes. Oral and written translations. Analysis of Spanish passages already explained. Oral or written reproduction of the principal ideas of a narrative, or of a chapter. Methodical study of syntax. Notions of literary history apropos of the authors referred to in the lessons.

Spanish Authors.

Cervantes: *Don Quijote* (1st part), *Novelas ejemplares.*
Ramon Mesonero Romanos: *Escenas Matritenses.* Guillen de Castro: *Mocedades del Cid.* Alarcon: *La Verdad sospechosa.*
Selections from historical, geographical, and scientific readings.

The Arabic Language. (In the Algerian Academy.)

Literary Arabic.

Recapitulation of grammatical ideas, emphasising the verbs and verbal forms. Oral and written themes. Written translations. Explanation and recitation of authors.

Proposed Works.

Mouliéras: *Manuel algérien.* Machuel: *Grammaire d'arabe régulier.*

Texts.

Mouliéras: *Chrestomathie élémentaire d'arabe régulier.*
Bel Kassen ben Sedira: *Cours de littérature arabe.*

Colloquial Arabic.

Conversation; proverbs and idioms. Oral and written translations of Arabian stories. Oral imitative themes. Exercises in reading from manuscripts.

Proposed Work.

Mejdoub: *Choix de fables.* Allaoua: *Recueil de thèmes et versions d'arabe parlé.* Houdas: *Lettres manuscrites.* Collection of letters published by the Algerian school of literature.

(9c.) *History* (2 hours per week).

History of Europe and France from 1610 *to* 1789.

(The programme in History is absolutely identical with that previously given. See section 6 herein, closing with "General View of Europe in 1789. Conclusion of the Course.")

(9d.) *Geography* (1 hour per week).

France: Remarks on its configuration, geological constitution, the relief of its surface, the régime of its waters, its climate. Study of the great natural regions, and of the provinces of France: Characteristic features of its orography, hydrography, and economic geography. Manners, traditions, great historical souvenirs. The French nationality. The density of the population.
The administrative régime studied, particularly in the "*département*" and the "*commune.*"
The military organisation. The frontiers. Natural defences and fortified places of France and of the neighbouring countries. Algeria and the protectorate of Tunis. Productive forces. Development of colonisation. The French colonies. American colonies: Possessions and establishments in Western Africa; in Eastern Africa. India, Indo-China, French Oceania.
Relation of France to the great countries of the globe. Emigration and immigration: exchanges.
International ways of communication. Comparison of the economic and military power of France with that of other States.

Science.

(9e.) *Mathematics* (4 hours per week).

Geometry: Of the plane and straight line in space. Lines perpendicular and oblique to a plane. Parallelism of straight lines and planes. Dihedral angles. Perpendicular planes. Ideas on dihedral and polyhedral angles. Polyhedrons. Prism, pyramid, frustum of pyramid. Summary ideas on similar polyhedrons. Relation of surfaces, and of volumes. Right cylinder with circular base. Lateral surface of cone, of the frustum of cone with parallel bases; volume of the cone and of the frustum of cone. Sphere: plane sections. Great circles; small circles; poles of a circle. Given a sphere to find its radius by a plane construction. Tangent plane to a sphere. Measure of the surface generated by a regular bent line turning about an axis taken in its plane and through its centre; area of the zone, area of the sphere. Measure of the volume of the sphere.

Algebra: Equation of the second degree with one unknown. Relation between the coefficients and the roots of an equation: $ax^2 + bx + c = 0$.
Inequalities of the second degree of one unknown.
Arithmetical progression. Geometrical progression. Common logarithms. Definitions and properties (only those numbers are considered which can be made part of the geometrical progression by the insertion of geometrical means). Use of tables to five decimals. Application of logarithms to the questions of compound interests and annuities.

Trigonometry: Definition of the sine, cosine, tangent and cotangent of an angle less than 90 degrees. Formulæ relative to the right-angle triangle. Use of trigonometrical tables to five places. Solution of a right-angled triangle in which one side of two elements is known. Numerical applications. Determination of the height of a vertical turn. Extension of the definition of trigonometrical lines of angles between 90 and 180 degrees. The principal relations among the elements of a triangle. Solution of a triangle with three known elements, one being a side. The

necessary

necessary formulæ are established geometrically as required. Numerical applications. Height of a vertical tower whose base is inaccessible. Distance between two inaccessible points. Ideas on triangulation.

Descriptive Geometry : Preliminaries. Point. Straight line. Representation of a plane. Problems on the intersection of two planes, or three planes, of a straight line and of a plane. Straight line and perpendicular plane. Methods of resection. Application of this method to problems of angle and distance.

(9F.) *Cosmography* (not more than 10 lessons).

Celestial sphere : Principal constellations. Diurnal movement. Right ascension and declination. Spherical form of the earth. Determination of longitude and latitude. Radius of the earth.

The Sun : Apparent movement of the celestial sphere. Ecliptic. Zodiacal constellations. The seasons. *The Moon :* Her phases. Eclipses of the moon and the sun. General description of the solar system. Planets and their satellites. System of Copernicus. Succinct details concerning the various planets. Comets, meteors, star-clusters, nebulæ.

Physics and Chemistry (4 hours per week).

(In the demonstrations of scientific facts the Professor shall embrace the opportunity of expounding the methods and history of the discoveries.)

(9G.) 1° *Physics.*

Static Electricity : Electrification by friction. The laws of electrical attraction and repulsion. Distribution of electricity on the surface of conductors. Effect of points. Electrification by influence. Electroscopes. Electropherous. Electric machine. Condensation. Leyden jars. Batteries. Lightning and lightning conductors.

Magnetism : Natural and artificial magnets. Poles. Magnetic needle. Definition of declination and inclination. Ordinary compasses. Magnetisation by simple contact.

Dynamic Electricity : The Voltaic cell. Chemical effects of currents. Cells of constant current. Calorific and luminous effects. Action of the current on the magnetic needle. Galvanometer. Action of currents upon currents. Solenoids. Magnetisation by currents. Electro-magnets. Elementary ideas on electric induction.

Acoustics : Production of sound, its propagation in air ; its velocity. Reflexion. Echo. Resonance. Quality of the sound. Intensity. Pitch. Measure of the number of vibrations.

Optics : Rectilinear propagation of light. Shadows, penumbra. Comparison of intensity of two luminous sources. Laws of reflexion. Properties of plane and spherical mirrors. Laws of refraction. Prism. Total reflexion. Camera lucida. Lenses. Decomposition and recomposition of light. Solar spectrum. Solar microscope. Magnifying-glass. Microscope. Astronomical telescope. Gallileo's telescope. Newton's telescope. Radiant heat (experimental study).

(9H.) 2° *Chemistry.*

Metals : Metals ; general properties, alloys, oxides, sulphides, chlorides. Salts : general properties. Action of acids, of bases, and of salts on salts. Ideas on the equivalents. Nitrates, Sulphates, Carbonates.

Potassium ; sodium ; oxides, chlorides, nitrates, sulphates, carbonates.

Ammonia salts. Baryta, calcium, carbonate, sulphate and phosphate of lime. Bleaching chlorides.

Magnesium. Magnesia ; carbonate and sulphate.

Zinc. Oxides, chloride, sulphate. Aluminium. Alumina. Alum, feldspars, clay, potteries, glass. Manganese (oxygenated compounds). Iron. Oxides, chlorides, sulphates. Iron ores. Principles of the metallurgy of iron. Cast-irons. Steels. Nickel. Chloride, sulphate. Tin. Oxides and chlorides. Copper. Lead. Oxides, sulphides, chlorides, sulphates, carbonates. Mercury. Silver. Principal compounds. Gold. Platinum.

Chemical manipulation : Oxidation of iron, of zinc, of lead by oxygen. Reduction of the oxides of iron and of copper by hydrogen. Reduction of the oxides of lead. Action of chlorine on antimony, on slaked lime, and on quick-lime. Action of sulphur on iron. Reduction of lead sulphide by iron. Reduction of silver chloride by the dry process. Action of charcoal on calcium sulphate. Electrolysis of water. Precipitation of copper by means of a cell. Silver-plating and electro-gilding. Caustic potash in lyes and solid. Crystallisation of potassium nitrate. Potassium bicarbonate. Sodium sulphate. Caustic baryta. Bareum chloride. Alumina. Alum. Potassium permanganate. Anhydric and hydrated ferric peroxide. Ferrous sulphate. Zinc sulphate. Stannic oxide. Stannous chloride. Stannic sulphide. White lead. Plumbic oxide. Lead sulphide. Cuprous oxide. Copper sulphate. Oxide of Mercury. Mercurous and mercuric chloride. Silver nitrate, oxide and chloride.

(9I.) *Drawing* (3 hours per week).

Freehand Drawing : Drawing from fragments of architecture. Decorative figures. Caryatids. Vases with figures. Ornamental frieses. Drawing of animals from bas-reliefs etc. Drawing of the whole human figure from the antique.

Geometrical Drawing : Completion of the theory of shadows and shading. Annular and helicoidal surfaces. Notions of linear perspective. Architectural drawing and colouring. The Corinthian order. *Ensemble*, and details from the monuments of Greek and Roman art. Machine drawing and drawing of constructions. Elevation, with geometral representation, to a definite scale of some part of a machine, or elements in some other construction.

The first part of the examination of the baccalauréat of modern secondary instruction has for its foundation the programme of the second class. By the decree of the 1st August, 1903, the texts in the modern languages required to be explained may be taken from the third and second classes.

On leaving the second class, the pupils may enter one of the sections of the first class, viz., the class of elementary mathematics.

10. *Modern Division, Class in Literature.*—The two branches of the first class on the modern side of the secondary schools of France are literature and science. The programme of the former is as follows :—

1st Class Literature (16 to 17 years).

French (3 hours per week). Philosophy, 8 hours. Principles of law and political economy, 2 hours per week during a semester, and 1 hour per week during the other semester. History, 3 hours. History of Civilisation and of Art, 2 hours. General geography, 1 hour. Natural sciences, 2 hours. German or English language and literature, 1 hour (optional). English or German, Spanish, Italian or Russian language and literature, 1 hour (optional). Book-keeping, 1 hour (optional). Drawing 1½ hours (optional).

(10a) *French Language and Literature* (3 hours per week).

Teaching and Exercises.

Sketch of the history of Greek and Latin literature. (The course will not be prescribed. The master endeavours to make his pupils acquainted with and understand the principal masterpieces).

Summary outline of French literature from 1789 to the present time. French compositions of various kinds.

Texts for reading, explanation and analysis.

I. Translation of the principal Greek and Latin masterpieces.

II. Eloquence in France since 1789 (various kinds) : Selections among discourses and extracts from discourses. French historians from the 19th century. Augustin Thierry, Guizot, Michelet, Thiers, Mignet, etc. : extracts. Extracts from Mme. de Staël. De Tocqueville : Introduction to the "*Démocratie en Amérique*," extracts from his works. Sainte-Beuve : Extracts from the "*Lundis*" and from the "*Portraits.*" Selections from the poetry of Victor Hugo and Lamartine. A collection of selected pieces from the Middle Ages to the 18th century, from the prose-writers to the 19th century, from the poets of the 19th century, and from foreign literatures (translations).

(10b.) *Philosophy* (8 hours per week).

Introduction : Science. The Sciences. Philosophy. Object and division of philosophy, etc., etc.

Psychology.

(The programme in philosophy, psychology, logic, ethics, the elements of metaphysics is identical with that previously given, viz., in section 7 hereinbefore. It ends with "Natural religion").

Philosophic authors.

Descartes : *Discours de la Méthode ; Les Principes de la philosophie*, Book 1.

Malebranche : *De la Recherche de la vérité*, Book II (*De l'Imagination*), 1 part, chap. 1 and 5 ; 2 and 3 parts entire.

Pascal : *Del l'Autorité en matière de philosophie ; De l'Esprit géométrique ; Entretien avec M. de Sacy.*

Leibniz : *Nouveaux Essais sur l'entendement humain.*

Introduction and Book 1 : *Monadologie.* Condillac : *Traité des sensations*, Book 1. V. Cousin : *Le Vrai, le Beau and le Bien*, 3rd part (le Bien).

Note : The master should explain by reading each year two French texts selected from the preceding list.

Principles of law and political economy (2 hours per week during one semester and 1 hour per week during the other semester).

(10c.) 1° Law.

Introduction : Law. Natural and positive law. Relation between ethics and law. Divisions of the law : (1) Public law (constitutional, administrative, criminal law, the law of nations). (2) Private law (civil, commercial, and industrial law). The codes. Part I. *Public Law.*

(I) *Laws guaranteed to citizens.* Civil equality. Individual liberty. Liberty of conscience. Liberty to work. Liberty to unite and to associate. Liberty of the Press. Imposition of the tax. Military service.

(II) Public powers. The constitutional laws of 1875. The legislative and executive power ; how and why they are separated. Legislative power ; the Senate and the Chamber of Deputies (Upper and Lower House). Executive lower. The President of the Republic and the Ministers.

(III) *Administrative organisation.* Division of the territory into *départements, arrondissements*, and *communes.* (1) The département : the prefect and the general council. (2) The arrondissement : the sub-prefect and the council of the arrondissement. (3) The commune : the "*maire*" (mayor) and the municipal council.

(IV) *Judiciary organisation.* Publicity and freedom of justice. The civil jurisdictions : (1) The Court of Cassation ; (2) the Courts of Appeal ; (3) the tribunals of first instance ; (4) the tribunals of commerce ; (5) Justices of the Peace ; (6) the councils of experts. The public ministry, barristers, solicitors, and bailiffs. Summary idea of the administrative jurisdictions, the Court of Accounts, the Council of State, and the Councils of the prefecture.

(V) *General idea of criminal law.* Foundation of the law of punishment. Punishable persons and penalties. Tribunals of repression : court of assizes, correctional tribunals, and simple police tribunals.

Part II. *Civil Law.*

(I) *The individual and the family.* (1) *Nationality* : what constitutes French nationality. Condition of strangers in France. (2) *Constitution of the family* : how it is formed : marriage, adoption, consanguinity and marriage Laws and duties of the family : paternal authority, marital authority.

(II)

(II) *Goods* (1) Property: how it is acquired; its inviolability (appropriation for the sake of public utility); its principal divisions: usufruct, servitudes; literary and industrial property. (2.) *Laws of credit:* different kinds of obligations; how the laws of credit arise: contracts and delinquencies; summary ideas on the principal contracts; rights of the creditor. (3.) *Means of credit*: privilege, mortgage, effects of commerce.

(III) *Inheritance*: Different classes of heirs. Equality of children. Obligations of heirs: *Bénéfice d'inventaire* (non-liability to debts beyond assets descended). Of wills: different forms of wills: different kinds of legacies.

(IV) *How rights are defended:* Summary ideas of procedure, judgment, means of appeal, appeal and "*pourvoi*" (appeal for reversal of judgment) in cassation. Summary ideas on methods of execution; bankruptcy.

(10D.) 2° *Political Economy.*

Introduction: Political economy. Its aim. Its relations with other sciences, and principally with law. Divisions of political economy; production, distribution, circulation, and consumption of wealth.

Part I.—Production of Wealth.

The elements of production: (1.) The earth and natural agents. (2.) Labour and industry; organisation and freedom of labour, historical aperçu, corporations, Turgot. Classification of the industries. Commerce. The rôle of the contractor in industry. (3.) Capital; different kinds of capital. How economy forms it, increases it, and preserves it.

Part II.—Distribution of Wealth.

(I) *Property:* Individual property; account and refutation of the principal systems which dispute it; basis of succession *ab interstate* and of the right to make one's will.

(II) *Conditions:* (1.) *Rent-charge.* The rent of the ground. Different systems of cultivation; great and small cultivation; inconveniences of a too great parcelling out or of an excessive concentration of property. (2.) *The rôle of capital in the distribution of wealth:* legitimacy of lending money at interest. (3.) The part of the contractor; profit. (4.) The part of the workman: application of the law of offer and request to work. Salary. Participation in profits. Workmen's associations; workmen's syndicates. Socialism; its different forms; refutation. The question of population in its relations to the distribution of wealth; poverty and pauperism.

Part III.—Circulation of Wealth.

(I) *Exchange:* its different forms. Value and price. Laws presiding over the determination, the variation, and the equalisation of prices; current price, cost of production. Competition. Monopolies.

(II) *Money:* In what sense it is a commodity. Gold money, silver and copper money. Standard and deduction. Latin Union. Monometallism and bimetallism. Monetary system.

(III) *Credit:* How it is a substitute for money, and is a source of wealth. Its relations with economy. (1.) Private credit; banking business. Different kinds of banking business; banks of circulation and the bank-note, fiduciary circulation. The Bank of France. Credit on real property (societies of "*crédit foncier*") and credit on personal property (*monts-de-piété*, advances on title deeds, general stores). (2.) Public credit; on what bases it rests; State loans. (3.) Theory of annuities and of amortisation (obligations of railroads and *crédit foncier*); sinking fund. Conversion of public debts. Legal currency and forced currency. The Bourse: its rôle from the point of view of credit.

(IV) Internal and external commerce. The Exchange. Commercial crises: their causes and their remedies. Importation and exportation; markets. Balance of trade; how it is regulated by currency or by international funds. Free-trade, protection, and prohibition; commercial treaties; the customs, bonds, public sales.

Part IV.—Consumption of Wealth.

(I) *Economy:* Its sources, foresight. Life assurances, insurance against fire and various accidents. Savings banks. Societies of mutual help.

(II) *Luxury.*

Part V.—Application of political economy to financial legislation.

(I) *The tax:* Various kinds of taxes. The proportional and progressive tax.

(II) *Budget:* How a Budget is established. Vote of the Budget. Annual character and special character of the Budget.

(10E.) *History* (3 hours per week).

Contemporary History (1789–1889. The programme is absolutely identical with that previously given in section 7 herein, ending with a "Résumé of the rôle of France in political, social, and intellectual history since 1789.")

History of Civilisation and of Art (2 hours per week).

(10F.) 1° *History of Civilisation.*

Prehistoric times. The empires and civilisations of the ancient East.

Greece. Legendary era. The Grecian cities and their rivalries.

The Greek spirit. Its diffusion in the East.

Rome. Primitive institutions. The struggle between the Patricians and the Plebeians. The conquest of Italy and of the world.

The Civil Wars. The Empire. Organisation of the Roman world.

Intellectual and moral progress. Christianity.

The

The Barbarians. The Byzantine, Mussulman, and Carolingian empires. The Feudal society. The Church and theocracy. The crusades. The communes. The French and English royalties. The decline of the Middle Ages. The great inventions and discoveries. Intellectual and religious revolution. The Renaissance and the Reformation. Struggles and triumph of the royal authority in the 17th century. The French and English monarchies. The 18th century. New Europe. The new ideas. The end of the old régime.

General History of Civilisation.

Developed Programme.

Prehistoric times: The sciences which lead to a knowledge of them. Various ages of stone and metal. Progress in tools, feeding, dwellings. Megalithic monuments.

Peoples, empires, civilisations of the ancient East: Religions, manners, industry, and commerce. The various systems of writing. Hieroglyphics, cuneiform characters. The alphabet. Modern discoveries.

Greek civilisation: Asia Minor, the Archipelago, and Greece. The Homeric age. Mythology, legends. Ionians, Dorians.

Commerce, colonies: Communal institutions of the Hellenic race. Sparta and Athens before the Medic wars. Social and political organisation.

Establishment of the supremacy of Athens. Development of the democratic constitution and apogee of the Greek spirit, to the age of Pericles. Greek life.

Rivalries of the Grecian cities: Predominance of Macedonia, Alexander. Conquest and foundations. Diffusion of the Greek spirit. Alexandria. Pergamos.

Rome. Italy: Primitive races and civilisations. The royal age. Patrician and client. Plebeians. Senate. Formation of the city. Struggle between the Patricians and Plebeians. The Magistracy.

The Roman army and Roman politics. Conquest of Italy, and struggle against Carthage. Conquest of the basin of the Mediterranean.

Changes in the spirit and institutions of Rome. Hellenism, slavery. The Gracchi and agrarian laws. The army in the city. Marius, Sulla, Pompey, Cæsar. End of the Republic.

The Roman Empire: New organisation of the Roman world.

Administration of the provinces. Public works and ways. The great writers.

The Antonines. Municipal organisation. Intellectual and moral progress. Monuments: lawyers, philosophers. Christianity. Transformation of the Empire to the end of the 3rd century. Triumph of Christianity and organisation of the Church.

Gaul under the Roman domination. Monuments, schools, industry and commerce. Colleges of artisans. Principal elements of modern life borrowed from antique civilisations.

The first centuries of the Middle Ages (from the 5th to the 10th): The Germans: religion, institutions and manners. The rôle of the Episcopacy in the face of the barbarian kingdoms.

The Byzantine, Mussulman and Carolingian Empires: Their civilisation. The Justinian code. The Koran: The schools of Charlemagne.

The great centuries of the Middle Ages (from the 11th to 13th): The feudal society, its principles, its manners. Chivalry. The Church, Papacy, and theocracy; religious orders. Influence of the Church on intellectual development.

The causes and results of the Crusades. The imprint of the East upon Western civilisation. Towns: The Charters of communes. Corporations, commerce, fairs. Apogee of the French Royalty to the 13th century. The royal domain. Parliament and the University of Paris. English Royalty. Magna Charta. Parliament.

The decline of the Middle Ages (14th and 15th centuries): Enfeeblement of the royal authority; decadence of chivalry; citizenship to the 14th century; Paris; Flanders; Italian towns; wealth; revolutions; enfeeblement of the religious spirit; the great schism and councils; beginning of modern times; the great inventions; maritime discoveries; their consequences.

The 16th Century: Political, intellectual, religious revolution; the European equilibrium; the renaissance; the reformation; political consequences of reformation; struggle between Catholicism and Protestantism; the principle of tolerance.

The 17th Century: The war during the first half of the century; public distress; St. Vincent de Paul.

Struggles and triumph of the Absolute Monarchy in France under Richelieu and Mazarin; the theory and organisation of the Royal power under Louis XIV; the Court; Versailles; protection accorded to the arts and sciences; religious persecutions; the diplomacy of the 17th century; political and religious revolutions in Holland, in England, the Republic of the United Provinces, the English monarchy.

The 18th Century: Decadence of the French monarchy; loss of our Colonial Empire; development of England, Prussia, and Russia; progress of the French mind; philosophers; economists; influence of French ideas on Europe; constitution of the United States; attempts at reform under Louis XVI; their check; the end of the old régime.

(10G.) 2° *History of Art.*

General idea of the course:—(1.) The fine arts; definitions and divisions; the plastic arts; art and industry; art considered in itself; the sentiment of the beautiful; æsthetics; realism and idealism; technique; execution and form.

(2.) Utility of comparing art with history; art considered in its relation to civilisation; its transformations according to the spirit of the people and the age; its development throughout the centuries. *The East:* Three principal centres; Egypt, Assyria–Babylonia, Persia.

(3 and 4.) *Egypt:* Rôle of religion and of beliefs in Art; tomb (pyramid, hypogeum); temple; sculpture.

(5.) *Assyria, Babylonia, Persia:* The Assyrian and Persian monarchy; Assyrian palace; Persian palace.

Greece: Geographical domain of Greek art; a glance at its early beginnings and its influence on the world.

(6.) Genius of the Greek people; the perception of harmony and proportion; realism and idealism in Greek art.
(7.) Age of Phidias; influence of religion and literature; comparision between the works of poetry and those of art; the statuary of Phidias and of Polycletes; physical beauty.
(8.) Architecture: what constitutes the distinction between the Greek orders; the monuments of Acropolis.
(9.) Greek art after Phidias; diffusion; new inspirations; passion; animation; grandeur.
Sculpture of Scopas and Praxiteles; painting: Apelles.
Rome: (10.) Etruscan art; influence of Greece on Rome; geographical domain of Roman art to its complete development; its influence.
(11 and 12.) Art of the Roman empire; the Roman mind; a tendency to the useful; the colossus; luxury in decoration; secondary rôle of religion and literature.
Palace. Triumphal arch. Temple. Amphitheatre.
Résumé of the history of ancient art in its great manifestations.

The Middle Ages and Modern Times.

(Three parts: Middle Ages: Renaissance and modern times; Contemporary times.)

(A.) *Middle Ages.* (13.) Elements of a new spirit in Art; Christianity; Germanism; Influence of ancient Art on the technique of modern Art. The catacombs.
(14.) Byzantine Art; Saint Sophia.
(15.) Mussulman Art; its particular characteristics; country, race, and beliefs. A Mosque; a palace. Geographical sphere of Mussulman Art; its influence.
(16.) Western Art; the elements of which it is composed. Its chief centre in the Middle Ages was in France. Influence of society: The Church, the feudal system, and chivalry.
(17.) Roman Art. The Roman Church; technique of architecture; the stone arch; the pillar. Ornamentation; semi-circular arch; sculpture.
(18.) Gothic art, true sense of the word. Technique of Gothic art: the buttress: Ornamentation and drawing: The pointed arch; glass windows.
(19 and 20.) A Gothic cathedral. Perception of the beautiful in Gothic Art. What are called Gothic times. The fortress.
(21. Industrial or secondary Arts in the Middle Ages (goldsmith's work, miniature, tapestry, furniture).
(B.) *Renaissance and Modern Times.* (22.) What is meant by the Renaissance; general and special acceptation of the word. Influence of antiquity. Renaissance in the North; Flanders. Difference between the spirit of the Middle Ages and that of the Renaissance shown by examples. Practical discoveries; oil-painting; engravings.
(23.) Renaissance in Italy. The part played by realism and Christian sentiment. The Originals in Florence.
(24 and 25.) The height of the classical Renaissance. Rome and the Popes. Leonardo da Vinci. Raphael; Michelangelo. The perception of the beautiful. Venice: Titian.
(26 and 27.) The Renaissance in France. Monarchy. The chateaux. Sculpture. Extension of the Renaissance in Europe.
(28 and 29.) The 17th century outside France. Flemish Art: Reubens; Teniers. Spanish Art: Velasquez; Murillo. Dutch Art: Rembrandt; Genre; landscape.
(30, 31 and 32). Rôle of France in the 17th century; what is called the classic spirit. Comparisons between the literature, art, and sentiments of society. The 17th century before the reign of Louis XIV. Poussin; Le Sueur. Louis XIV. Versailles: The Brun, Mansart, Girardon, Puget. The Louvre: Claude Perrault.
(33.) New spirit in the 18th century. The society of the times, gallantry, luxury; fashion. Watteau and Boucher.
(C.) *Contemporary age.* (34 and 35). Changes in ideas towards the end of the 18th century; new return to classic antiquity. The Revolution and the Empire; David, Gros.
(36.) New tendencies. Influence of French or foreign literature. Classics and romances. Prudhon, Géricault, Ingres, and Delacroix.
(37.) Important place of music beside the plastic arts. The great masters of symphony and of the lyric drama since the end of the 18th century. Résumé and conclusion.

(10G.) *Geography* (1 hour per week).

General Geography.

(1.) *Europe. The six great powers.—England:* The race, its institutions. Wealth, breeding, mines, manufacturing industry. External commerce. The Colonial Empires, the Indies, the Dominion, the Cape, Australia. The positions commanding the great maritime routes.
Russia: Formation, political and social state. Inequality in the distribution of agricultural production, mineral wealth, industry. Russia and the Eastern question. Conquest of Northern and Central Asia. Caravan commerce. The Transcaspian railway.
Germany: Constitution of the Empire. Military forces. Principal centres of mining and manufacturing industry. Progress of commerce. Great railways crossing Germany. Ports. Emigration and colonial expansion.
Austro-Hungary: Formation and recent transformations. Constitution of 1867. Dualism. The race question. Agricultural wealth of Hungary. Industry in Austria, in Bohemia. Austria and the Eastern question.
Italy: Italian unity. Richness of the soil. Industry. Artistic wealth. Ports. Great railways of the Peninsula and the Alps.
France: Comparison of its wealth, its forces, and external activity with that of the other great powers.
The States of second order: Comparison of their rôle in the past and in their present position.
The cities of Europe.

(II) *The New World:* Discovery, colonisation, emancipation. Indigenous races, the question of slavery. Anglo-Saxon America, Latin America. The United States. Political formation and Constitution. Elements of the race and movement of the population. Agricultural, industrial production. Commercial activity. Great markets and railways.

Latin America. Brazil: Plantations and mines. Other Republics of Southern and Central America. Their agricultural and mineral production. The Antilles: The European possessions in America. The question of the Inter-oceanic canal.

(III) *Asia, Oceania, Africa.—Asia:* Primitive civilisation, religions, the invasions of Asiatic origin. Progress and rivalry of European powers in Asia.

Russian Asia, English, Turkish, French. The great Asiatic States.

Persia, China, Japan. Their wealth, their relations with the West.

Oceania: Great colonial possessions of Holland and England. Their wealth. The ports of the Pacific Ocean. Chinese expansion in this region.

Africa: Egypt. The Nile. Ancient civilisation. Grecian, Roman, and Mussulman Egypt.

Egypt and France. Wealth. Development and contemporaneous changes. The Suez Canal.

French Africa: The routes of the Sahara. Access to the Soudan.

The Interior of Africa: The great lakes and rivers. The great explorers of the 19th century. The zones of influence of France, of England, of Germany. Nature and object of the trade in Africa. The slave-trade.

(10H.) *Natural History and Hygiene* (2 hours per week).

The programmes are the same as those of the First Class (Sciences). See programmes already given.

(10I.) *Foreign languages and literatures* (optional).

German or English (1 hour per week).

English or German, Spanish, Italian or Russian. (1 hour per week.)

Arabic (in the Algerian Academy).

German, English, and Italian language and literature.

Explanation and recitation of authors. The explained texts are commented on in the modern language. Facts explained in a foreign language by the pupils. Composition of various kinds.

German Authors.

Schiller: *Die Braut von Messina.* Goethe: *Iphigenie auf Tauris: Faust* (pt. 1). Voss: Homer's "Iliad" (extracts); Virgil's "Æneid" (extracts). Selections from German ballads and from modern German lyric poetry. Selection from historical readings, geographical and scientific. Freytag: *Soll und Haben.*

English Authors.

Shakspeare: "Macbeth," "King Richard III." Tennyson: "Enoch Arden." George Eliot: *Adam Bede.* Pope: *Homer's Iliad* (Extracts). Dryden: *Vergil's Æneis* (extracts). Macaulay: *History of England.* Selections from historical, geographical and scientific readings.

Italian Authors.

Dante: *La Divina Commedia* (extracts); *La Vita nuova e il Canzoniere* (extracts). Petrarch: *Rime* (selections, with commentaries from Leopardi and the notes of Ambrosoli). Leopardi: *Opere* (extracts). Alfieri: *Tragedie* (extracts). Manzoni: *I promessi Sposi.* Guerrazzi: *Scrriti.* De Amicis (Edm.): *Racconti militari,* for the use of schools.

Spanish Language and Literature.

Continuation of the exercises of the preceding year.

Series of studies of the vocabulary, with corresponding written or oral exercises. Explanation and recitation of authors. The texts are commented upon in the Spanish language. Themes and translations. Very simple essays in composition: Narratives, descriptions, familiar letters. Methodical study of the syntax. Ideas of prosody. Summary history of Spanish literature.

Spanish Authors.

Cervantes: *Don Quixote* (part 2). Various novels (extracts). Ercilla: *La Araucana* (extracts). Lopez de Vega: *El Nuevo Mundo descubierto,* selected play. Calderon de la Barca: selected play, *La Vida es sueño.* Moralin: *El Si de las Fiñas, La Comedia nueva.* Selections from historical, geographical, and scientific readings.

Arabic (in the Algerian Academy).

Literary Arabic: Ideas of literary history. Oral and written themes. Written translations. Explanations and recitation of authors.

Proposed Work.

Bel Kassen ben Sedira: *Cours of littérature arabe.*

Colloquial Arabic.

Conversation: Proverbs and idioms. Oral and written translations of Arabian stories. Oral imitative themes. Readings of manuscript letters.

Proposed Works.

Medjoub: *Choix de fables.* Allaoua: *Recueil de versions et de thèmes d'arabe parlé.*

Houdas: *Lettres Manuscrites.* Collection of letters published by the Algerian School of Literature.

(10J.) *Book-keeping* (1 hour per week). Optional course.

The programme is the same as that of the 1st Class (Sciences), hereinafter.

(10K.) *Drawing* (1½ hour per week). Optional.

The programme is the same as that of the 2nd class. See programme already given.
The first series of examinations for the "second part" of the *Baccalauréat de l'Enseignement secondaire moderne* have for their base the programme of the 1st Class (Literature Division).

11. *Modern Division. Class in Science.*—The second branch of the 1st Class on the modern side is that in Science, the programme of which is as follows:—

1ST CLASS (SCIENCE DIVISION). (PUPILS, ON AN AVERAGE, FROM 16 TO 17 YEARS.)

Mathematics, 6 hours per week. Physics and Chemistry, 4 hours. Natural History, 2 hours (twelve lessons of 1 hour each is given to hygiene). Philosophy, 2 hours. Principles of law and political economy, 2 hours per week during one semester and 1 hour per week during the second semester. History, 3 hours. General geography, 1 hour. Book-keeping, 1 hour. German or English language and literature, 1 hour (optional). English or German, Spanish, Italian, or Russian language and literature, 1 hour (optional). Drawing, 3 hours.

(11A.) *Mathematics* (6 hours per week).

Complements of Algebra: Very succinct ideas on analytical geometry. Equation of the first degree. Angular coefficient of a straight line. Construction from its equation of a straight line. Representation of a function by a curve. Conception of the derived function or derivative (differential coefficient). The derivative is the angular coefficient of the tangent.

Variation of the following functions:—

$$y = ax + bx + c,$$

$$y = \frac{ax + b}{a'x + b'}$$

$$y = \frac{ax^2 + bx + c}{a'x^2 + b'x + c'}$$

(For this last function, only numerical examples need be given.)

Remark.—In view of the variation of the preceding functions, it will suffice to make the pupils acquainted with the derivative (differential coefficient) of a sum, of a product, and of a quotient.

Trigonometry: Circular functions. Complete definition of the six trigonometrical lines. Theorem concerning projections. Formulae of additions for arcs. Duplication and bisection.

Ordinary curves: Ellipse: Definition of the ellipse by its focal properties. Drawing the curve by points and by continuous motion. Axis. Directive circles. Vertex. Intersection of a straight line with the ellipse. Tangent. Normal. Equation of the ellipse referred to its axes. Orthogonal projection of the circle.

Parabola: Definition of the parabola by the property relating it to its focus and directrix. Drawing the curve by points and by continuous motion. Axis. Vertex. Intersection of a straight line with a parabola. Tangent. Normal. Sub-normal. Equation of the parabola.

Geometrical study of plane sections of the cylinder and cone of revolution by Dandelin's method.

Helix. Definition. Property of the tangent. Projection on a plane parallel to its axis.

Cosmography. (Recapitulation of the course of the preceding year.)

Stereographic projection. Inequality of the days and nights. Measure of time. True solar day. Mean solar day. Calendar. The Julian reform; the Gregorian reform. Kepler's laws. Inequality of the seasons.

Ideas on the history of astronomy: Hipparchus, Ptolemy, Copernicus, Galileo, Tycho-Brahé, Kepler, Newton, Clairaut, d'Alembert, Lagrange and Laplace Herschel, Leverrier.

Descriptive Geometry.

Recapitulation: Change of the vertical plane of projection. Rotations. The most simple applications. Cylinder and cone. Tangent planes. Plane sections. Sphere. Plane tangent to a given point; tangent plane through a straight line. Plane section. Circumscribed cone. Circumscribed cylinder. Shadow of a sphere, of a cone, and of a cylinder.

Method of plans. Application as regards straight lines and planes. Contours. Simple problems. Reading of a topographical chart. Chart of the État-Major.

Ideas as to the construction of plans. Planimetry and levelling.

Explanation of the different methods. Use of the instruments. (Field practice whenever possible.)

Ideas of perspective. Examples: Hexagonal pavement; stone cross; gate with perron. Elements of free perspective.

Mechanics.

Statics: Forces; their measure. Resultant of several forces. Composition of forces. 1° case of two forces; 2° case of a number of forces. Polygon of forces. Composition of parallel forces. Couple (not the theory of couples).

Centre of a system of parallel forces. Centre of gravity: Its investigation in several simple cases—triangle, trapezium, quadrilateral, prism, pyramid. Reduction of any number whatsoever of forces applied to a solid body, at first to three forces, then to two. Conditions of equilibrium of a free solid body acted upon by any number of forces whatsoever.

Particular cases where the body may move around a fixed point or a fixed axis, or repose on a fixed plane.

Machines:

Machines: 1°. Lever. Fulcrum. Ordinary balance. Roberval's balance. Quintenz's balance. Roman balance. Fixed pulley and movable pulley. Pulley blocks.

2°. Wheel and axle. Lifting-jack. Spur wheel. Crab-winch. Crane.

3°. Inclined plane. Application of the inclined plane.

Kinematics. Rectilinear motion: Uniform motion. Non-uniform motion. Mean velocity. Velocity at a given moment. Diagram of the law of motion. Velocity is equal to the angular coefficient of the tangent to the diagram of the law of motion. Railway graph motion uniformly varied. Law of spaces. Laws of velocities. Registering apparatus. Morin's machine.

Curvilinear motion: Mean velocity. Velocity at a given instant.

Ideas on the movement of an invariable material system: Movement of a plane figure in its plane. Instantaneous centre. Movement of translation. Movement of rotation about a fixed axis. Angular velocity.

General ideas on the change of motion. Gearing parallelogram of Watt ; lozenge of Peaucellier. Crank and winch. Cams and eccentric gearing. (Models should be shewn to the pupils.)

Dynamics. Notions regarding machines in a state of movement: Mechanical work. Unit of work. Work done by constant force. Work in the case of a variable force. Element of work ; total work ; its graphic representation. The work of the resultant is equal to the sum of the works of the components. Principle of virtual work in the completely connected systems. This principle should be enunciated and its verification in simple machines indicated ; application to some compound machines. Enunciation of the general principle of vital forces. Application to the machines. Equality of motive work and resistant work. Conception of passive resistance. Friction ; its laws. Work of passive resistance. Work done by a machine. Employment of fly-wheels and brakes.

Physics and Chemistry (4 hours per week).

(In the demonstrations of scientific facts the Professor shall embrace the opportunity of expounding the methods and history of discoveries).

(11B.) 1° *Physics.*

Motion. Force. The proportionality of force to acceleration. Mass. Work. *Vis viva.* Law of the fall of bodies.

Atwood's machine. The pendulum and its application.

Specific weights of solids and liquids. Density of gas.

Manometers. Air pumps and air compressors. Syphons. Sources of heat. Conceptions of the mechanical theory of heat. Thermal machines: steam-engines: Gas engine. Elementary and purely experimental ideas as to electric potential and capacity.

Thomson's electrometer. Enunciation of the fundamental laws of currents. Practical units of intensity, resistance, and electromotive force. Ruhmkorff coil. Magneto-electric and dynamo-electric machines. Reversibility of these. Electric lighting. Galvano-plastics, gilding, silvering. Electric bells. Telegraph. Telephone. Microphone. Music intervals. The gamut. Transverse vibrations of strings ; experimental laws. Harmonics, timbre. Spectroscope, spectrum of different luminous sources. Spectrum analysis. Summary ideas regarding photography.

(11C.) 2° *Chemistry.*

General Chemistry: Chemical combination. Decomposition. Dissociation.

Law of weight ; numerical proportion. Equivalents. Laws of gaseous volume. Atomic weight. Laws of specific heat.

Isomorphism. Principles of thermo-chemistry. Application to the most simple cases.

Organic Chemistry.

Elements of organic substances. Immediate principles.

Analytic and synthetic methods. Classification according to the chemical functions.

Hydrogen carbides: Gaseous carbides ; acetylene ; olefiant gas ; benzene ; marsh gas. Chloroform. Liquid and solid carbides. Petroleum ; essence of turpentine ; benzene ; toluene ; naphthalene ; anthracene.

Alcohols: Ordinary alcohol and its principal ethers. Methylic alcohol. Glycerine. Neutral fatty substances. Glucoses. Cane sugar. Milk sugar. Dextrine. Starch and feculæ. Gums. Cellulose. Phenol. Alizarine.

Aldehydes: Essence of bitter almonds (Benzaldehyde). Camphor.

Acids: Principal volatile acids (formic, acetic).

Alkalis: Artificial alkalis ; aniline ; toluidines ; rosanilines. Natural and artificial colouring matters. Vegetable alkalis (nicotine, morphine, quinine, strychnine).

Amides: General ideas. Urea. Uric acid. Indigo. Albumin and its congeners (casein, fibrin, gluten.) Gelatine. Preservation of organic substances. Alcholic fermentation. Wine. Beer.

Chemical Analysis.

Characteristics of the bases of the principal kinds of salts. Examination of the base of a soluble salt. Examination of acid.

Ideas on quantitative analytic chemistry by means of standard solutions. Experimental alkalimetry. Estimation of chlorine. Estimation of iron.

Elementary analysis of an organic substance.

Quantity of nitrogen in an ammoniacal form.

Manipulation of Chemistry.

Manipulation of organic substances and chemical analyses according to the programme of chemical analysis. (Thirty hours).

Acetylene (produced by incomplete combustion and by action at red heat). Olefiant gas. Dutch liquid. Marsh gas.

Chloroform.

Chloroform. Rectification of benzene. Nitrobenzene. Sublimation of naphthalene.
Rectification of alcohol. Alcoholic fermentation. Acetic ether.
Saponification of oil by lead oxide. Preparation of glycerine.
Soda soap. Stearic acid.
Cane sugar. Crystallisation in alcohol. Preparation of glucose from starch. Preparation of starch and dextrine.
Gun-cotton.
Sublimation of camphor. Preparation of benzaldehyde.
Formic acid (preparation). Crystallisable acetic acid. Oxalic acid. Tartaric acid. Sublimation of benzoic acid.
Preparation of aniline; its transformation into rosaniline.
Indigo vat. Preparation of morphine. Preparation of urea.
Chemical analysis.

Natural History and Hygiene. (2 hours per week).

(11D) 1° *Natural History.*

In the demonstration of scientific facts the professor shall embrace the opportunity of expounding methods and the history of discoveries in science.

(1.) Anatomy and physiology of animals and plants.
(2.) Animal anatomy and physiology, I, II, III.
(3.) Vegetable anatomy and physiology.
(4.) Nutrition.

These, viz., (1) to (4), have all been given in full, viz., in section 7, hereinbefore.

(11E) 2° *Hygiene.*

This programme has already been given also in section 7 hereinbefore.

(11F.) *Philosophy* (2 hours per week).

I. *Elements of Scientific Philosophy.*

Science. The Sciences. Classification and hierarchy of the sciences. The mathematical sciences; their object, their principal divisions. Method: definitions, axioms, demonstrations. The natural sciences; their object, their principal divisions, their methods; experience; the methods of observation and experimentation. Classification. Hypothesis. Induction. Rôle of deduction in the natural sciences.
The moral sciences; their object, special characteristics, principal divisions. Method; induction and deduction in the moral sciences. Rôle of history in the moral sciences; historical criticism.
Summary statement of the principal general hypotheses in the different orders of sciences.

II. *Elements of Moral Philosophy.*

The facts of the moral order, their proper characters, liberty, responsibility, and moral personality.
The aims of human life: happiness, usefulness, duty. Plato, the Stoics, Kant.
The individual: Duties toward the moral personality. Human dignity.
The family: Its moral constitution. The family spirit. Authority in the family.
Society: Right and rights. Respect for the personality of others. Slavery; servitude; the abuse of power. Respect for the person in his beliefs and opinions; religious and philosophical liberty tolerance. Respect for the personality in regard to goods. Principle of property. Justice and charity. Different forms of charity. Devotion. The country; the nation, that which constitutes it. Public power. The State and the laws. Basis of public authority. The government. Duties and rights of governments. Moral sanctions. God. Natural religion. Principles of law and political economy. (2 hours per week during one semester and 1 hour per week during the other semester.)
The programme is the same as that for the literature division in this class. (See section 10 hereinbefore.)

(11G.) *History* (3 hours per week).

The programme is also the same as that for the literature division. (Section 10 hereinbefore).

(11H.) *General Geography* (1 hour per week).

The same remark applies.

(11I.) *Book-keeping* (1 hour per week).

Commerce: Description of the most usual commercial operations; purchase, sale, exchange, payment, collection, settlement, clearing. Merchants. Features of the mercantile profession. Principal kinds of commerce. Trade in merchandise by merchants, importers, and exporters. Trade in precious metals by money-changers; the operations of bankers; carrying trade, ship-owners, etc.
Intermediaries: Brokers; agents; maritime brokers, etc.
Transport of merchandise: Freight notes; despatch by railway; bill of lading.
Book-keeping (Goods): Invoices; purchases; sales, etc. Receipts, promissory-note, bill of exchange, draft, cheque. Clearing-house, etc. Payments, cash-book.
Discount and negociation of bills: Recapitulation of the commercial and rapid methods of calculating interest and discount. Bills discounted. Bills due, etc.
Current accounts: Definition, etc.
Theory of Bookkeeping: Description of an ordinary set of books. Classification and mechanism of accounts. Transference from the day book to the journal, and from the journal to the ledger, etc.

Balance Sheet: Its principle and utility.

Stock-book: Definition. Inventory of goods and bills. Doubtful or insolvent debtors. Profit and loss accounts. Result. Stock, balance, and schedule. Closing and reopening accounts. Exchange, etc. Transactions on the exchange. Average market price. Brokerage. Revenue. Taxes. Arbitration actions, obligations, etc.

(11J.) *Foreign language and literature.* (Optional.)

German or English (1 hour per week).

English or German, Spanish, Italian or Russian. (1 hour per week.)

Arabic: (In the Algerian academy.)

The programme is the same as that of the First-class Literature Section, given in the preceding section.

(11K.) *Drawing* (3 hours per week).

Freehand Drawing. (1.) The same exercises as in the second-class, see programme before given.

(2.) Exercises in composition. Modelling.

Geometrical drawing: The same exercises as in the second class. See programme previously given.

The second series of examinations for the second part of the "Baccalauréat de l'enseignement secondaire moderne" have for their foundation the programme of the Science division in the first class.

12. *Elementary Mathematical Class*: The higher classes in Science (classes supérieures de sciences) are common to either branch. The programmes of the class of elementary mathematics are prescribed by the order of the 24th January, 1891, and are as follows:—

PROGRAMMES IN SCIENCE.

ELEMENTARY MATHEMATICAL CLASS.

Division of the class-hours: Mathematics, 10 hours per week. Physics and Chemistry, 6 hours. Natural history, 1 hour. Philosophy, 2 hours. History, 3 hours. Modern languages, 1 hour. Graphical drawing.

(12A.) I. *Mathematics.* (10 hours per week.)

Arithmetic: Decimal numeration. Addition and subtraction of whole numbers. Multiplication of whole numbers. Product of several factors. Fundamental theory and its consequences. Division of whole numbers. Theorems relative to division. Remainders of the division of a whole number by 2, 5; 4, 25; 8, 125; 9, 3. Characters of divisibility by each of these numbers.

The greatest common divisor of two numbers. Finding the greatest common divisor by the method of successive divisions. The prime numbers among them. Every number which divides a product of two factors and which is prime as regards one of the factors divides the other. The least common multiple of two numbers.

Definition of prime numbers. Elementary properties. Decomposition of a whole number into a product of prime factors.

Composition of the greatest common divisor, and of the least common multiple of several numbers, decomposed into prime factors.

Vulgar fractions. Reduction of a fraction to its most simple expression. Reduction of several factors to the same denominator. Least common denominator. Operations on ordinary fractions. Extension of the theory to the fractions of which both terms are vulgar fractions.

Decimal numbers. Operations (treating decimal fractions as particular cases of vulgar fractions). Calculation of a product or of a quotient to a given approximation.

Reduction of a vulgar fraction to a decimal fraction. Condition of possibility. Recurring decimals. Square or a whole or fractional number. Composition of the square of the sum of two numbers. The square of a fraction is never equal to a whole number. Definition and extraction of the square root of a whole number, at least to a unit. Definition and extraction of the square root of a whole or fractional number to a given approximation. Metric system. Exercises.

Ratio of two numbers. Equal ratio. To divide a number in the ratio of given numbers.

Measurement of magnitudes. Definition of the relation between two magnitudes of the same kind. Theorem, the ratio between two magnitudes of the same kind is equal to the quotient of the numbers which measure them. Directly or inversely proportional magnitudes. Problems. Simple or compound "rule of three." Simple interest. French annuities. Discounts. Questions on mixture and alligation. Definition of absolute and relative error. Summary of the theory of relative errors. Exercises.

(12B.) II. *Algebra.*

Introduction of negative numbers: Examples: Positions of a point upon an axis, formula for uniform movement. Operations with negative numbers. Algebraic fractions. Extension of properties demonstrated in arithmetic.

Algebraic expressions: Monomials, polynomials. Similar terms.

Algebraic operations: Addition, subtraction, and multiplication of polynomials. Division of monomials. Exponent zero. Division of two given polynomials with reference to decreasing powers of the same letter.

Equation of 1st degree: Equation of the 1st degree of one unknown. Equation of 1st degree of several unknowns. Various methods of solution.

Solution and discussion of two equations of 1st degree in two unknowns.

Formation of equations from problems. Discussion of results.

Numerical inequalities. Inequalities of the 1st degree.

Equation

Equation of the 2nd degree: $ax^2 + bx + c = 0$. (The theory of imaginaries is not included.) Relation between the co-efficients and roots. Nature and signs of roots.
Study of a trinomial of the 2nd degree. Changes of sign. Inequalities of the 2nd degree.
Variation of the magnitude of a trinomial. Graphic representation. Biquadratic equation. Biquadratic trinomial.
Problems of the 2nd degree. Questions of maximum and minimum which may be treated by solutions of equations of the 2nd degree.
Variations of the quotient of two trinomials of the 2nd degree. Graphic representation. Numerical examples.
Arithmetical and geometrical progressions.
Sums of the squares of whole numbers.
Common logarithms. Definition and properties (only those numbers are considered which can be made part of the geometrical progression by the insertion of geometric means). Use of table to 5 decimals.
Compound interest. Amortisation. Problems.

(12c.) III. *Geometry.*

Plane figures.

Straight line and plane: Angle, perpendiculars.
Triangles, isosceles triangle. Case of equality of these triangles.
Perpendicular and oblique lines. Right angled triangles, case of equality.
Definition of a geometrical locus. Geometrical locus of points equidistant from two points or from two straight lines.
Parallel lines.
Sum of the angles of a triangle, of a convex polygon.
Parallelograms.
Figures that are symmetrical in relation to a point or to a straight line. Two plane symmetrical figures are equal.
Translation of a figure of invariable form. Composition of several translations.
Use of the ruler and of the square.
Circle: Intersection of a straight line and circle.
Tangent to the circle, the two definitions of the tangent.
Arcs and chords.
Relative positions of two circles.
Measures of angles.
Movement of rotation about a point. All displacement of a plane figure of invariable form, in its own plane, may be reproduced by a translation or a rotation. Use of the rule and compass. Protractor, geometrical loci.
Proportional lines: Every parallel to one of the sides of a triangle divides the other two sides proportionally. Reciprocal.
Properties of the bisectors of a triangle. Geometrical locus of points where the relation of the distance to two fixed points is constant.
Similar triangles. Case of similitude.
Homothetic figures. Centre of similitude of two circles. Similar polygons.
Metrical relations in a right-angled triangle, and in any triangle whatsoever.
Proportional lines in the circle. Power of a point in relation to a circle. Radical axis. Radical centre.
Division of a straight line into parts proportional to given straight lines.
Fourth proportional, mean proportional. Division of a straight line in mean and extreme ratio.
Regular polygons. Shew that regular polygons of any number of sides whatever may exist. The inscribing of the square, hexagon. Equilateral triangle, decagon. Pentagon, etc. Two regular polygons of the same number of sides are similar. Relation of their perimeters.
Length of a circular arc. Ratio of the circumference to the diameter. Approximate value of π. (No other questions are to be given except the determination of this value by the method of perimeters or that of isoperimeters.)
Area of polygons, of the circle.
Measure of the area of a rectangle, parallelogram, triangle, trapezium, of any polygon whatsoever.
The square of the hypotenuse of a right-angled triangle is equal to the sum of the squares in the sides containing the right angles.
Relation of areas of two similar polygons. Area of a regular convex polygon, of a circle, of a sector and of a segment of a circle. *Ratio* of areas of two circles.
Fundamental ideas of surveying. Use of the chain and the cross-staff.

(12d.) III. *Geometry* (continued).

Figures in space.

Plane and straight line: Two straight lines which intersect determine a plane. Straight line and perpendicular planes.
Properties of the perpendicular and of the oblique line drawn from the same point in a plane.
Parallelism between straight lines and planes.
Dihedral angle. Right dihedral. Plane angle corresponding to a dihedral angle. The ratio of two dihedral angles is the same as that of their plane angles.
Planes perpendicular to one another.
Trihedral angles: Each face of a trihedron is less than the sum of the two others. Limit of the sum of the faces of a trihedron.
Supplementary trihedrons.
In every trihedral each dihedral plus two right angles is greater than the sum of the two others. Limits of the sum of the dihedrals of a trihedral angle.

If the edges o any trihedral angle whatsoever be prolonged beyond its vertex a new trihedral angle will be formed which cannot be superimposed upon it, but which nevertheless is composed of the same elements. Exact statement of the elements of a trihedron.

Case of equality of trihedrons. Sum of the faces of a convex polyhedral angle.

Polyhedrons.

Parallelepiped. Volume of a rectangular parallelepiped, of a right parallelepiped. Volume of a right prism, of an oblique parallelepiped, of an oblique prism.

Pyramid. Volume of the pyramid. Volume of the truncated sections of the pyramids with parallel bases.

Homothetic polyhedrons. Similar polyhedrons. Ratio of the volumes of two similar polyhedrons.

Translation of a figure of invariable form in space. Rotation about the axis.

Symmetrical figures: Symmetry in regard to a point. Symmetry in regard to a plan. Relation of the second mode of symmetry to the first.

Symmetry by relation to a straight line. Two symmetrical polyhedrons are equivalent.

Right *cylinder*, with circular base. Lateral surface. Volume.

Right *cone*, with circular base. Sections parallel to the base. Lateral surface of the cone, of a truncated cone with parallel bases. Volume of a cone and of a truncated cone with parallel bases.

Sphere.

Plane sections, great circles, small circles. Pole of a circle. Given a sphere to find its radius by a plane construction.

Tangent plane.

Measure of the surface generated by a regular bent line turning about the diameter. Area of the zone. Area of the sphere.

Measure of the volume generated by a triangle, turning about an axis taken, in its plan, through one of its vertices. Application to volume generated by a regular polygonal sector turning about one of its diameters. Volume of a sphere. Volume of a spherical segment.

Fundamental conceptions in regard to the ellipse and the parabola.

Ellipse: Definition of the ellipse by its focal properties. Drawing the curve by points and by continuous motion. Axes. Vertices. Directive circles. Intersection of a straight line with the ellipse. Tangent, normal. To draw tangents to an ellipse, 1° from a given point; 2°, parallel to a given straight line.

Parabola: Definition of the parabola by its property relating to its focus and its directrix. Drawing the curve by points and by continuous movement. Axis, vertex.

Intersection of a straight line with the parabola. Tangent. Normal. Subnormal. To draw a tangent to a parabola; 1°, from a given point, 2°, parallel to a given straight line. Relation between the square of a chord perpendicular to the axis and its distance from the vertex.

Conception of the helix.

Its definition, property of the tangent.

(12E.) IV. *Trigonometry.*

Trigonometrical lines. Relation between the trigonometrical lines of any arc. Calculation of the trigonometrical lines of several arcs, $\frac{1}{3}\pi$, $\frac{1}{4}\pi$, etc.

Theorem concerning projections.

Formulæ of addition for the sine, cosine, and tangent, according to the theory of projection.

Expression for sin $2a$, cos $2a$, tan $2a$.

The whole of the trigonometrical lines of the arc a expressed rationally as a function of tan $\frac{1}{2}a$.

Given cos a or sin a to calculate sin $\frac{1}{2}a$ or cos $\frac{1}{2}a$.

Given tan a to calculate tan $\frac{1}{2}a$.

To transform the sum of two trigonometrical lines, sine, cosine or tangent into a product.

Limit of (sin x) $/x$ when x tends toward zero.

Use of trigonometrical tables to *five* decimals.

Relations between the angles and sides of a triangle.

Solution of triangles.

Application of trigonometry to the various questions arising in the preparation of plans.

Solution and discussion of several simple trigonometrical equations.

Trigonometrical solution of an equation of the 2nd degree.

(12F.) V. *Descriptive Geometry.*

Insufficiency of ordinary drawing for the representation of bodies. Utility of a geometrical method which by the execution of graphical constructions on one and the same plane makes it possible to exactly ascertain the form and position of a figure.

The projection of a point, a straight line and of any line whatsoever upon a plane.

Horizontal and vertical planes of projection.

Representation of a point, of a straight line, and of any line whatsoever by their horizontal and vertical projections.

Representation of a plane.

Problems relating to the straight line: To determine the path of a given straight line by its projections. To ascertain the projections of a straight line when the position is given. To draw through a point a parallel to a given straight line. To ascertain by means of their projections whether two given straight lines cut one another.

Problems relating to the plane: To draw a plane, 1°, through three points; 2°, through two straight lines that intersect; 3°, through two parallel lines; 4°, through a point and a given line. To draw through a point a plane parallel to a given plane.

To determine the intersections of two planes. To determine the point common to three planes.

Problems relating to the straight line and the plane. To determine the point of intersection of a straight line with a given plane. To ascertain on a diagram if the given straight line is in the given plane. To draw through a point a straight line parallel to a given plane and inclined to a given straight line. To draw through a point a straight line touching two other straight lines. To draw a straight line in a given direction touching two other straight lines.

Straight

Straight lines and perpendicular planes: Necessary and sufficient condition in order that a right angle may be projected upon a plane as a right angle. To draw through a point a straight line perpendicular to a plane. To draw through a point a plane perpendicular to a given straight line. To draw through a point a straight line perpendicular to a given straight line.

Methods of rotations, the axis being supposed perpendicular to one of the planes of projection.

Change of one of the planes of projection.

Application of these methods to the following questions :—

1°. *Determination of distances :* Distance of two points. Distance from a point to a plane. Distance from a point to a straight line. Shortest distance between two straight lines.

2°. *Determination of angles :* Angles between two straight lines. The angle between a straight line and a plane. Angles between a straight line and planes of projection. Angle between two planes. Angles between a plane and its planes of projection.

Projections of a prism and a pyramid : Hidden and visible parts. Plane sections of these polyhedrons.

Projections of a circle.

Projection of a helix upon a plane parallel to its axis.

(12G.) VI. *Mechanics.*

Elements of Statics.

The idea of force. Equal forces. Numerical evaluation of a force. Two equal and contrary forces applied to two points in a straight line of invariable length and acting in the direction of that line are in equilibrium. Translation of the point of application of force, to any point whatsoever, in its line of action.

Composition of two forces applied to the same point. Theorems of moments in regard to a point taken in the plane in which the forces act.

Composition of any number of forces whatever applied to the same point. Condition of equilibrium. Composition of two parallel forces. Couple. A couple has no resultant. Composition and decomposition of couples.

Composition of any number whatsoever of parallel forces. Centre of parallel forces. Its ascertainment in several simple cases. Triangle, trapezium, quadrilateral, prism, and pyramid.

Composition of any system whatever of forces applied to a solid body. Their reduction to a single force and a couple. The general condition of equilibrium. Conditions of equilibrium when the body upon which they act is not wholly free.

Particular case where the body may move about a fixed point or about a fixed axis, or where it lies upon an immovable plane.

Simple Machines.

Lever : General condition of equilibrium of the lever.

Balances : Ordinary balance, Roman balance, Roberval's balance, Quintenz' balance.

Pulley : Equilibrium of the fixed pulley. Equilibrium of the movable pulley. Pulley blocks.

Wheel and axle : Equilibrium of the condition of the wheel and axle. Winch.

Inclined plane : Equilibrium of body placed upon an inclined plane.

(12H.) VII. *Cosmography.*

Celestial sphere. Principal constellations. Diurnal movement. Right ascension and declination. Spherical form of the earth. Determination of longitude and latitude. Radius of the earth. The sun. Apparent movement in the celestial sphere. Ecliptic ; zodiacal constellations. The seasons.

The moon. Its phases. Eclipse of the moon and the sun.

General description of the Solar system. Planets and their satellites. The system of Copernicus. Succinct account concerning the various planets. Comets, meteors, star-clusters, nebulæ.

Complement.

Stereographic projection. Inequality of days and nights. Measure of time. True solar day. Mean solar day. Calendar. The Julian reform, the Gregorian reform. Kepler's laws. Inequality of the seasons.

Physics and Chemistry (6 hours per week).

(12I.) I. *Physics.*

Preliminaries.

Various states of matter. Principle of inertia. Force. Enunciate, without demonstration, the rule of the parallelogram of forces and of the theory relative to the composition of parallel forces.

Gravity. *Equilibrium of liquids and gases :* Direction of gravity. Centre of gravity, weight. Balance. Transmission of pressures in fluids : Pascal's principle. Free surface of liquids in equilibrium. Pressure upon the bottom and sides of vessels. Communicating vessels. Hydraulic press. Principle of Archimedes, specific weights. Areometers. Atmospheric pressure. Barometer. Mariotte's Law. Manometers. Mixture of gases. Air-pump. Ordinary pumps. Syphons. Aerostats.

Heat.

Dilatation of bodies by heat. Thermometer. Definition and use of co-efficients of dilatation. Maximum density of water.

Density of gas (Regnault's method).

Specific heats of solids and liquids. Principle of the method of mixtures. Fusion and solution. Solidification. Heat effusion. Refrigerant mixtures. Evaporation. Formation of vapour *in vacuo*. Saturated and non-saturated vapours. Maximum elastic tension of water-vapour at various temperatures. Mixture of gas and vapour. Evaporation. Ebullition. Distillation. Heat evaporation. Hygrometry. Hygrometry of condensation. Dew. Rain. Snow. The conception of conductivity. Ordinary applications.

Acoustics.

Acoustics.

Production and propagation of sound. Velocity of sound in the air. Reflexion of sound. Echo. Intensity. Pitch, musical intervals. The transversal vibrations of strings. Harmonics, timbre.

Optics.

Rectilinear propagation of light. Velocity, omitting description of the mode of measurement.
Comparison of intensities of two different lights.
Laws of reflexion. Plane mirrors. Spherical mirrors, concave and convex mirrors. Laws of refraction. Prisms. Lenses.
Composition of white light. Dispersion. Solar spectrum.
Spectra of different luminous sources.
Magnifying glass. Compound microscope. Astronomical telescope. Galileo's telescope. Newtonian telescope. Chemical action produced by light. Brief summary of the ideas concerning photography.
Radiant heat. General idea concerning the phænomena of emission, reflexion, transmission, and absorption. Identity of radiant heat and light.

Electricity and Magnetism.

Electrification by friction. Enunciation of the law of electrical attraction and repulsion. Distribution of electricity on the surface of conductors. Power of points. Elementary and purely experimental ideas concerning electric potential and capacity.
Electrification by influence. Electroscopes. Electrophorous.
Electrical machines. Lightning and lightning-conductors.
Natural and artificial magnets: Poles.
Definition of declination and inclination. Ordinary compasses. Magnetisation by simple contact. Condensation. Leyden jar; batteries. Electroscope condenser.
Experiments of Galvani and Volta. Voltaic cell. Chemical effects of currents. Cells of constant current. Experiment of Oersted. Galvanometer. Enunciation of the fundamental laws of currents. Practical units of intensity, resistance, and electro-motive force. The action of currents upon currents and upon magnets. Solenoids. Magnetisation by electric currents. Telegraphy. Thermo-electric currents. Electric induction; fundamental experiments.
Principle of magneto- and dynamo-electric machines. Reversibility of these machines. Telephone. The calorific and luminous effects of currents. Voltaic arc; incandescent lamp. Galvanoplastics. Gilding and silvering.

Complement.

Law of the fall of bodies. Atwood's machine. Morin's machine. Proportionality of forces to their accelerations. Mass. Its measurement by means of weights. Pendulum. Applications. Brief elementary ideas concerning work, *vis viva*, energy, the mechanical equivalent of heat. Various forms of energy. Principle of the preservation of energy.
Steam-engine. Condenser. Expansion-engine.

(12J.) II. *Chemistry.*

Simple and compound bodies. Crystallisation. Isomorphism and dimorphism. Analysis and synthesis. Principles of nomenclature. Metalloids and metals. Acids, bases, salts, neutral bodies. Multiple proportion. Chemical equivalence.
General conceptions as to the disengagement or absorption of heat in chemical combination. Water. Analysis and synthesis. Law of volumes. Hydrogen. Oxygen. Combustion. Liberated heat Atmospheric air. Analysis.
Nitrogen. Nitrogen oxides. Nitric acid. Ammonia.
Chlorine. Bromine, iodine and fluorine. Hydrochloric acid.
Sulphur. Sulphurous acid. Sulphuric acid. Hydro-sulphuric acid. *Phosphorus.* Phosphoric acid. Phosphoretted hydrogen.
Carbon. Carbon monoxide. Carbonic acid. Carbon disulphide. Hydrogen carbides: acetylene, marsh gas, olefiant gas. Coal gas. Flame.
Classification of the metalloids into natural families. Metals in general. Properties, classification. Alloys. Principal modes of production of metallic oxides. Action of heat, of carbon, and of water. Potassium, soda, chalk. Sulphur. Chloride; sea salt. Salts. General properties. Action of acids, of bases, and of salts upon salts. Principal kinds of salts. Carbonates:- Potassium carbonate, sodium carbonate, calcium carbonate. Sulphates:—Alums. Nitrates:—Nitre and powder. Potable waters. Principles of the metallurgy of iron. Cast-iron and steel.
Generalities regarding organic matters existing in human beings or produced artificially. General methods; analysis and synthesis. General principles of classification; functions.
NOTE.—Two lessons will be devoted to the exposition of these summary ideas of organic chemistry.

(12K.) *Natural History* (1 hour per week).

Anatomy and Physiology of Animals and Plants.

The histological developments in the anatomy and physiology of animals and plants, and in particular all questions relating to the structure of organs, will be given only in so far as they serve to explain the physiology.
General characteristics of living beings. Animals and plants.
Animal anatomy and physiology. General characterists of animals. Principal tissues.
I. Functions of nutrition. (Special study of man.)
Digestion: digestive apparatus: foods; mechanical and chemical phænomena of digestion.
Alcoholic drinks. Fermented drinks: cider, beer, wine. Physiological action of fermented drinks. Pathological effects of their abuse. Distilled drinks: brandy. Pathological effects of their habitual use,

Circulation:

Circulation : blood, apparatus for the circulation of the blood ; mechanism of circulation : lymph and the thoracic canal.

Absorption. Respiration : respiratory apparatus, mechanical, physical, and chemical phænomena. Animal heat. The excretory organs ; kidneys, glands of the skin. The liver and its functions.

Summary of ideas on the organs of circulation and respiration in the animal series.

II. *Functions of relation.* (Special study of man.)

The sense organs : the eye, vision, accommodation.

Remarks on anomalies of vision. The ear, hearing. Smell, taste, and touch. The larynx ; the voice. The motor apparatus : bone, skeleton, articulations. Muscles : their structure and functions. The nervous centres : their functions. Motor and sensory nerves. Principal modifications of the apparatus of relation in the animal series.

Anatomy and physiology of plants. General characters of plants. Principal tissues.

I. *Nutrition.* (Special study of a phanerogamic plant).

Root. Radicles. Growth and uses of the root. The stem : growth and functions of the stem. Leaf : its structure ; development and functions. Nutrition in general : Plants with chlorophyll and without it. Foods. Nutritive reserves. Respiration.

II. *Reproduction.* (Special study of a phanerogamic plant.)

Flower : floral envelopes : Stamen, anther, pollen, carpels, ovule.

Fecundation and development.

Fruit and grain. Germination ; accompanying phænomena.

Cryptogams ; reproduction and alternate forms. Parasitism.

(12L.) *Philosophy* (2 hours per week).

The programme is that already given in Section (11 F) hereinbefore.

(12M.) *History* (3 hours per week).

The programme is given in Section (7 c) hereinbefore.

(12N.) *Modern Languages* (1 hour per week).

Conversational exercises on the reading.

Prescribed Authors.

German.

Selections from—Goethe : *Faust* (Part I). Auerbach : *Die Frau Professorin.* Freytag : *Bilder aus der deutschen Vergangenheit* (extracts from the 18th and 19th centuries) ; *Soll und Haben.* Lyric poetry from the 18th and 19th centuries.

English.

Selections from—Shakespeare : *Hamlet.* Macaulay : *Essays.* George Eliot : *Adam Bede, The Mill on the Floss.* Selections from poetry of the 19th century.

(12O.) *Drawing and Colouring.*

13. *Special Mathematical Class.*—In the Special Mathematical Class the mathematical education is somewhat more advanced. The programme is as follows :—

SPECIAL MATHEMATICAL CLASS.

Mathematics, 15 hours per week (3 hours of which are lectures). Descriptive Geometry and diagram' 4 hours. Physics and chemistry, 6 hours. French, 1 hour. Modern languages, 2 hours. Imitative drawing, 2 hours.

Mathematics (15 hours per week, of which 3 hours are lectures).

(13A.) *Arithmetic.*

Decimal numeration. Addition and subtraction of whole numbers. Multiplication of whole numbers. The product of several whole numbers do not change when the order of factors is rearranged. In order to multiply a number by a product of several factors, it is sufficient to multiply by these several factors successively.

Division of whole numbers. In order to divide a number by a product of several factors, it is sufficient to divide it successively by the several factors. Remainders of the division of a whole number by 2, 3, 5, and 9. Characters of divisibility by each of these numbers. Definition of prime numbers and of numbers prime with respect to one another. Find the greatest common divisor of two numbers. Every number which divides a product of two factors, and which is prime with respect to one of the factors, divides the other. Decomposition of a number into its prime factors. To find the smallest number divisible by given numbers.

Vulgar Fractions : A fraction does not change in value when its two terms are multiplied or divided by one and the same number. Reduction of a fraction to its simplest expression. Reduction of several fractions to the same denominator. The least common denominator. Operations on vulgar fractions. Decimal numbers. How a product and a quotient may be obtained to a given decimal unit. *Corresponding relative errors in the data, and the result.*

Reduction of a vulgar fraction to a decimal fraction : When the denominator of an irreducible fraction contains other prime factors than 2 and 5, the fraction cannot be converted exactly into decimals, and the quotient, indefinitely extended, consists of recurrent figures. Given a simple or mixed decimal recurring fraction, to find the vulgar generating fraction,

System

System of legal measures. Measures of length. Metre: its divisions: its multiples. Relation of the old toise of 6 feet to the metre. To convert into metres a given number of toises. Measurements of areas, of volume and capacity.

Measure of weights. Coin. Standard and weight of French coins.

Tables for conversion of old measures into legal measures.

Formation of the square and the cube of the sum of two numbers.

Extraction of the square root of a whole number. Summary indication of the process for the extraction of the cube root.

The square and cube of a fraction. The square root of a vulgar and decimal fraction to a given decimal unit.

Ratio of concrete magnitudes. In a series of equal ratios the sum of the numerators and denominators form a ratio equal to the original ratio.

General notions concerning magnitudes which vary in the same or in the inverse ratio. Solution, by the so-called method of reduction to unity, of the simplest questions in which such quantities are considered. Put in evidence the ratios of the quantities of the same kind which enter into the final result, and conclude the general rule to follow in order to write immediately the solution required.

Simple interest. General formula which furnished the solution of all questions relative to simple interest. Commercial discount. To divide a sum into parts proportional to given numbers. Exercises. Use of the tables of logarithms in order to shorten the calculations of multiplication and division, the raising to the powers and the extraction of the roots. Employment of the rule in calculation, limited to multiplication and division.

(13B.) *Geometry.*

Recapitulation. Plane figures. Straight line and plane. Bent line. Curved line. When two straight lines starting from one and the same point, follow different directions they form a figure called an angle. Generation of angles by the rotation in a plane of a straight line about one of its points. Right, acute and obtuse angles. Through a point taken on a straight line, only one perpendicular line can be drawn. Adjacent angles. Opposite angles at a vertex.

Triangles. The most simple cases of equality. Properties of the isosceles triangle. Properties of the perpendicular and oblique lines, drawn from the same point in a straight line. Cases of equality of right-angle triangles.

Parallel lines. When two parallel lines are met by a secant, the four acute angles which result are equal to one or the other, so also the four obtuse angles. Denominations of these various angles. Reciprocal. Angles where the sides are parallel or perpendicular. Sum of the angles of any triangle and any polygon whatsoever.

Parallelograms. Properties of their sides, of their angles, and of their diagonals. Of the circumference of the circle. Mutual dependence of arcs and chords. The radius perpendicular to a chord divides this chord and the subtended arc each into two equal parts. Mutual dependence of the lengths of chords and of their distances from the centre. Conditions under which a straight line may be tangent to a circumference.

Arcs intercepted by parallel chords. Conditions of contact and of the intersection of two circles.

Measure of angles. If at the vertices of two angles two arcs of a circle of the same radius are described, the ratio of the angles is equal to that of the arcs terminated by the sides.

Inscribed angles. Evaluation of an angle in degrees, minutes and seconds.

Problems. Use of the rule and compass in the constructions on paper. Testing of the rule.

Elementary problems on the construction of angles and triangles. Drawing of perpendicular lines and parallel lines. Abbreviation of constructions by means of the square and the protractor. Testing of the square. Division of a straight line and of an arc into two equal parts. To describe a circle which passes through three given points. From a given point without a circle to draw a tangent thereto. To draw a tangent common to two circles. To describe on a given line a segment of a circle containing a given angle.

Proportional lines. Every line parallel to one of the sides of a triangle divides the two other sides proportionally.

Reciprocal. Properties of the bisectors of the angle of a triangle.

Similar polygons. On cutting a triangle by a line parallel to one of its sides, a partial triangle similar to the first is given. Condition of similitude (homology) of triangles. Decomposition of similar polygons into similar triangles. Ratio of perimeters. Ratios between the perpendicular let fall from the vertex of the right angle of a right-angled triangle on to the hypotenuse, the segments of the hypotenuse, the hypotenuse itself, and the sides of the right angle.

Ratios between the square of the number which expresses the length of the side of a triangle opposed to a right angle, acute or obtuse, and the squares of the numbers which express the lengths of the two other sides.

If a point be taken in the plane of a circle from which secants are drawn, the product of the distances from this point along each secant to the two points of intersection with the circumference, is constant, whatever be the direction of the secant. Case where it becomes a tangent.

To divide a given straight line into equal parts, or into parts proportional to given straight lines. To find a fourth proportional to three lines, and a mean proportional. To construct, on a given straight line, a similar polygon to a given polygon.

Regular polygons. Every regular polygon may be inscribed within and circumscribed about a circle.

The ratio of the perimeters of two regular polygons of the same number of sides, is the same as that of the radius of the circumscribed circles. The ratio of a circumference to its diameter is a constant number. To inscribe in a circle of a given radius a square, a regular hexagon.

Means of estimating the approximate ratio of the circumference to the diameter, in calculating the perimeters of the regular polygons of 4, 8, 16, 32 sides, inscribed in a circle of a given radius.

The area of polygons and of circle. Measurement of the area of the rectangle, of the parallelogram, triangle, trapezium, and of any polygon whatsoever. Methods of decomposition into triangles and into right-angled trapeziums.

Ratio

Ratio between the square constructed on the side of a triangle, opposed to a right angle, acute or obtuse, and the squares constructed on the two other sides.

The ratio of the areas of two similar polygons is the same as that of the squares on their homologous sides.

Area of a regular polygon. Area of a circle, of a sector and of a segment of a circle. Ratio between the areas of two circles of different radius.

(13C.) *Figures in Space.*

The plane and straight line. Two straight lines which intersect determine the position of a plane. Condition under which a straight line may be perpendicular to a plane.

Properties of the perpendicular and oblique lines drawn from one and the same point to a plane. Parallelism of straight lines and planes. When two planes meet one another, the figure which these planes, founded by their common intersection, form, is called a *dihedral angle*. Generation of the dihedral angles by the rotation of a plane about a straight line. Right dihedral. Plane angle, corresponding to a dihedral angle. The relation of two dihedral angles is the same as that of their plane angles.

Planes perpendicular with respect to one another. If two planes are perpendicular to a third, their common intersection is perpendicular to this third.

Trihedral angles. Each face of a trihedron is less than the sum of two others.

If the edges of a trihedron be prolonged beyond the vertex, a new trihedron is formed, which cannot be superimposed on the first, although it may be composed of the same elements. (The teacher shall confine himself to this simple idea).

Polyhedrons. Parallelepiped. Measure of the volume of the right-angle parallelepiped, of any parallelepiped whatsoever; of the triangular prism, of any prism whatsoever.

Pyramid. Measure of the volume of the triangular pyramid, of any pyramid whatsoever. Volume of the frustum of a pyramid with parallel bases. Numerical exercises. Similar polyhedrons. The section of a pyramid by a plane parallel to its base is a partial pyramid, similar to the first. Two triangular pyramids which have an equal dihedral angle, between two similar and similarly situated faces, are equal. (This unique case of homology must be borne in mind).

Decomposition of similar polyhedrons into similar triangular pyramids. Relation of their volumes. Numerical exercises. Right cone with circular base. Section parallel to the base. Lateral surface of the cone, of a truncated cone with parallel bases. Volume of the cone, and of a truncated cone with parallel bases.

Right cylinder with circular base. Measure of the lateral surface and of the volume. Extension of the right cylinders with any base whatsoever.

Sphere: Plane sections, great circles, small circles. The poles of a circle. Given a sphere, to find its radius. Tangent-plane. Measurement of the surface generated by a regular bent line, turning about an axis taken in its plane and through its centre. Area of a zone and of the whole sphere.

Measurement of the volume generated by a triangle turning about an axis taken in its plane through one of its vertices. Application to the regular polygonal sector, turning about an axis taken in its plane and through its centre. Volume of a spherical sector and of the entire sphere.

Complement.

(13D.) *Polyhedral angles.*

Each of the plane angles of a trihedral angle is less than the sum of the two others. The sum of the plane angles which form a polyhedral angle is always less than four right angles.

If two trihedral angles are formed from the same plane angles, the dihedral angles included among the equal plane angles are equal.

(13E.) *Symmetrical figures.*

Plane of symmetry: Centre of symmetry. In two symmetrical polyhedrals the homologous faces are equal each to each, and the inclination of two adjacent faces, in one of these solids, is equal to the inclination of the homologous faces in the other. Two symmetrical polyhedrals are equivalent.

(13F.) *Figures traced on the sphere.*

In every spherical triangle, any side whatsoever is less than the sum of the two others. The shortest path from one point to another on the surface of the sphere is an arc of great circle. Measure of an angle between two arcs of great circle. Property of the polar or supplementary triangle. Two spherical triangles on the same sphere, or on equal spheres, are equal in every respect in the following cases, viz.:—

(1.) When they have an equal angle contained between two equal sides, each to each.
(2.) When they have an equal side adjacent to two equal angles, each to each.
(3.) When the three sides are equal, each to each.
(4.) When the angles are equal, each to each.

In these different cases, the triangles are equal or symmetrical. The sum of the angles of every spherical triangle is greater than two right angles and less than six right angles. The surface of an isosceles quadrantal triangle is to that of the whole sphere as its vertical angle is to four right-angles.

Two spherical symmetrical triangles are equal. The area of a spherical triangle is to that of the whole sphere as the excess of the sum of its angles upon two right angles is to eight right angles.

What is meant by "spherical excess." To each property of the triangles or spherical polygons correspond an analogous property of the trihedral or polyhedral angles.

(13G.) *Algebra—Recapitulation.*

Algebraic computation. Employment of letters and signs as a means of abbreviation and generalisation. Similar terms. Addition and subtraction. Multiplication. Rule of signs. Division of the monomials, exponent zero. Summary statement of the division of polynomials. Equation of the first degree. Resolution of numerical equations of the first degree to one or several unknowns, by the method of *substitution*.

Interpretation of negative values in problems. Use and computation of negative quantities. Cases of impossibility and indetermination. General formulæ for the resolution of a system of equations of the first degree to two unknowns. Complete discussion of these formulæ. Equation of the second degree to one unknown. Solution. Double solution. Imaginary values.

Decomposition of the trinomial x^2+px+q into factors of the first degree. Relation between the coefficients and the roots of the equation: $x^2+px+q=0$.

Questions of maximum and minimum which can be resolved by equations of the second degree.

(13H.) *Complement.*

Ideas on incommensurable numbers. Division of polynomials. Solution of general equations of the first degree to several unknowns. The relative calculations should be developed for the case of two equations and for that of three equations. The general rule for the formation of the common denominator and how to deduce the numerator should be shewn. Complete discussion of the general formulæ peculiar to the case of two equations.

When, in the equation $ax^2+bx+c=0$, a tends toward zero, one of the roots may grow indefinitely.

Numerical calculation of the two roots when a is very small.

Equations reducible to the second degree. Calculations of the *arithmetical* values of roots.

Fractional exponents. Incommensurable exponents. Negative exponents.

(13I.) *Progressions and series in general.*

Arithmetical and geometrical progression. Summation of the terms.

The meaning of *series*. Convergence and divergence. The terms of a series may indefinitely decrease without the series being convergent. A geometrical progression is convergent if the ratio is less than unity; divergent if the ratio is greater than unity. A series is convergent when, from a certain term, the absolute value of the relation of a term to the precedent is constantly inferior to a fixed number less than unity. When the terms of a series decrease indefinitely, and are alternatively positive and negative, the series is convergent.

(13J.) *Formulæ of the binomial and its application.*

Arrangements, permutations, and combinations. Development of the whole and positive powers of a binomial. Development of $(a+b\sqrt{-1})$. Limit toward which $(1+\frac{1}{m})^m$ tends, when m increases without limit. Summation of heaps of shot.

(13K.) *Logarithms and their uses.*

In forming all the powers of any number whatsoever, greater or less than 1, all numbers can be reproduced. General properties of logarithms.

When numbers are in geometrical progression, their logarithms are in arithmetical progression.

The transition from one system of logarithms to another system, Napierian logarithms. Common logarithms. What is meant by a modulus of a system of logarithms. Use of common logarithms. Characteristics. Negative characteristics.

A number being given, find its logarithm by means of Callet's tables. A logarithm being given, find the corresponding number. Use of proportional parts. Use of the slide-rule. *Solution of exponential equations by means of logarithms.* Compound interest. Annuities.

(13L.) *Derivative functions* (or the Differential Calculus).

Development of a whole function $f(x)$ following the increasing powers of h, when x is replaced by $x+h$. Derivative of a whole function. The derivative of any function whatsoever is the limit towards which tends the relation of the increase of the function to the increase of the variable when the latter tends towards 0.

Derivative of a function of a function. Rules for the finding of the derivative of a sum, of a product, of a power, of a quotient of functions of which the derivatives are known.

Derivatives of circular functions, direct and inverse.

Derivatives of exponential and logarithmic functions.

A function is increasing or decreasing according as its derivative is positive or negative.

Two functions which have equal derivatives differ only by a constant quantity. To return from the derivative to the primitive function in cases where this operation can be done immediately.

Application of the theory of derivatives to the development of functions $l(1+x)$ and arc tan x in convergent series following the increasing powers of x, when this variable lies between -1 and $+1$.

Calculation of logarithms by means of the series which gives the logarithm of $n+1$ when that of n is known. Calculation of Napierian logarithms. Value of the modulus of common logarithms. Calculation of common logarithms.

Calculation of the ratio of the circumference to the diameter from the series arc tan x.

(13M.) *Theory of equations.*

How a complete function $f(x)$ varies when x varies in a continuous manner between $-\infty$ and $+\infty$. When two numbers a and b, substituted in function $f(x)$, give results of contrary signs, the equation $f(x)=0$ has at least one real root between a and b. Every function $f(x)$ which remains continuous for all the values of x between a and b possesses this property.

An algebraical equation of an odd degree has at least one real root.

An

An algebraical equation of an even degree, of which the last term is negative, has at least two real roots.

Every algebraical equation $f(x) = 0$, with real or imaginary coefficients of the form $a + b\sqrt{1}$, has a real or an imaginary root of the same form. (This theorem shall be admitted with demonstration.) If a is the root of an algebraical equation, the first member is divisible by $x - a$. An algebraical equation of the degree m has always m real or imaginary roots, and it cannot have more. Decomposition of the first member into factors of the first degree. Relations between the coefficients of an algebraical equation and the roots.

When an algebraical equation, the coefficients of which are real, has an imaginary root, $a + b\sqrt{-1}$, it has also for root the conjugate expression $a - b\sqrt{-1}$.

In a complete or incomplete algebraical equation the number of the positive roots cannot surpass the number of variations, a consequence referable to the number of negative roots.

Investigation of the product of the factors of the first degree, common to two integral functions in x. Examination of the roots common to two equations, the first members of which are integral functions of the unknown quantity.

How is an algebraical equation recognised as having two equal roots, and how then its solution made to depend on other equations of less degree, the roots of which are unequal.

Examination of the commensurable roots of an algebraical equation with commensurable coefficients.

(13N.) *Calculus of differences.*

Differences of the various orders.

Given $m + 1$ numbers $u_0, u_1, u_2, \ldots u_m$, to find :—(1) the expression of the general term u^n as a function of the first term u_0 and of its successive differences; (2) the expression of $\Delta^n u_0$ as a function of the proposed numbers.

The difference of the order m of an integral function of the degree m is constant, if the difference of the variable is itself constant.

Knowing the results of the substitution of m whole consecutive numbers in an integral function of the degree m, the results of the substitution of all the other integral numbers positive or negative can be obtained easily by means of the differences.

Application to the case of integral function of the 3rd degree, when the values corresponding to the values $-1, 0, +1$, of the variable are known.

Formula of interpolation. Application of Newton's method of interpolation to the exact representation of an integral function $f(x)$ of the degree m when the values $u_0, u_1, u_2 \ldots u_m$ corresponding to the values of x, $x_0, x_0 + h, \ldots x_0 + mh$ are known. If the difference h and the quantities $u_0, \Delta u_0, \Delta^2 u_0, \ldots \Delta^m u_0$ are positive, $x_0 + (m-1)h$ is a superior limit of the positive roots of equation $f(x) = 0$.

(13O.) *Application of the theory of differences to the numerical solution of equations.*

Separation of the roots of an algebraical equation by the substitution of different numbers for the unknown. Special study of the case of an equation of the third degree. Substitution of whole numbers by means of differences. Substitution of equidistant numbers of a tenth between two whole consecutive numbers; of equidistant numbers of a 100th between two consecutive 10ths, etc., either to separate the roots or to approximate to them.

These last substitutions are effected by means of new differences, deduced from the first. Use of graphic constructions in the application of the preceding method.

Examination of the roots of a transcendental equation. When equidistant and sufficiently approximate numbers have been substituted so that the differences of results may be considered as equal up to a certain order, the operation may be continued as in an algebraical equation.

Having obtained, with a certain degree of approximation, a root of an algebraical or transcendenta equation, a closer approximation may be made by Newton's method. Use of graphical constructions by the application of this method.

Decomposition of rational fractions into single fractions.

Every rational fraction $F(x) \Big/ f(x)$ is decomposable into one whole part and into various simple fractions.

The decomposition can only be made in one way. Means of effecting this when the binomial factors of the denominator $f(x)$ are known.

(13P.) *Trigonometry.*

Both plane (rectilinear) and spherical trigonometry are taken. We consider first rectilinear trigonometry. *Recapitulation.* Trigonometrical lines (only the ratios of the trigonometrical lines to the radius are to be considered).

Knowing the sine and the cosine of two arcs, find the sine and the cosine of their sum and difference. To find the tangent of the sum or difference of two arcs, when the tangents of these two arcs are known.

Expressions of $\sin 2a$ and $\tan 2a$. Knowing $\cos a$, to calculate $\sin \frac{1}{2}a$ and $\cos \frac{1}{2}a$.

To adapt for logarithmic calculation the sum of two trigonometrical lines, sine or cosine. The construction of trigonometrical tables. Use of tables. Solution of triangles. Relations between the angles and sides of a right-angled triangle, or of any triangle whatsoever. Solution of right-angled triangles. Knowing a side of two angles of any triangle whatsoever, to find the other parts, as well as the surface of the triangle.

Knowing two sides, and the contained angle, to find the other parts as well as the surface of the triangle.

Knowing the three sides, to find the angles and the surface of the triangle. Applications of trigonometry to the different questions that present themselves in survey. These questions have been enunciated in the programme of geometry.

(13Q.) *Complement.*

Values of sine and cosine of the arcs $\frac{1}{3}\pi$, $\frac{1}{6}\pi$, ... $\frac{1}{5}\pi$, $\frac{1}{10}\pi$, ... etc.

The side of a regular decagon inscribed in the circumference is equal to the greater part of the radius divided into mean and extreme ratio. Geometrical construction. Inscribing a regular polygon of 15 sides. To calculate tan $\frac{1}{3}a$ when tan a is given.

Equation of the third degree obtained by seeking sin $\frac{1}{3}a$ when sin a is given; or cos $\frac{1}{3}a$ when cos a is given, or tan $\frac{1}{3}a$ when tan a is given. Examination of the roots of this equation.

Solution of numerical equations of the second and third degree by means of trigonometrical tables.

Relations among trigonometrical lines of one and the same angle. Expression of the sine or cosine as a function of the tangent.

(13R.) *Spherical trigonometry.*

General formulæ: Fundamental relations between the sides and angles of a spherical triangle.

$$\cos a = \cos b \cos c + \sin b \sin c \cos A \text{ ; etc.}$$

By the method of elimination, the following are deduced:—

$$\sin A : \sin B = \sin a : \sin b \text{ ; } \cos a \sin b - \cos A \sin C = \cos b \cos C,$$

and by consideration of the supplementary triangle,

$$\cos A = -\cos B \cos C + \sin B \sin C \cos a.$$

Formulæ relative to the right-angled triangle:

$$\cos a = \cos b \cos c \text{ ; } \sin b = \sin a \sin B \text{ ;}$$
$$\tan c = \tan a \cos B \text{ ; } \tan b = \sin c \tan B.$$

In a right-angled triangle, the three sides are less than 90°, or else two of the sides are greater than 90° and the third is less[1]. An angle and the opposite side are either both less than 90°, or both greater.

Solution of triangles: Case of right-angled triangles. Cases of oblique-angled triangles. (1.) The three sides a, b, c, or the three angles A, B, C, are given. Formulæ adapted to logarithmic calculation the values of sin $\frac{1}{2}a$ and tan $\frac{1}{2}a$ being given. (2.) The two sides and the contained angle, or the two angles and the side adjacent are given.

Formulæ of Delambre and de Népert. (3.) Two sides and an opposite angle, or two angles and an opposite side are given. Use of an auxiliary angle in order to adapt the case for logarithmic calculation.

Application: Knowing the latitudes and longitudes of two points of the globe, find the distance between them.

(13S.) *Application of geometry and trigonometry to surveying.*

Defining straight line on the earth. Measurement of a portion of a straight line by means of the chain. Surveying with metre. Setting out perpendiculars. Use of the surveyor's cross-staff. Measurement of angles by means of the graphometer.

Description and use of this instrument. Drawing the plan. Scale of reduction. Surveying by means of the Plane-table.

To determine the distance to an inaccessible point, and the distance between two inaccessible points. To prolong a straight line beyond an obstacle which obscures the view.

To define a circle which shall pass through three given points notwithstanding that the centre is not accessible.

Three points, A, B, C, being fixed and traced on a chart, to determine thereon a point P, the angle which AB and BC subtend having been measured.

Ideas on land-surveying. Case where the plot is bounded in one of its parts by a curved line.

(13T.) *Complement.*

Measure of bases by means of rods. Measurement of angles. Description and employment of the circle. Use of the telescope in order to render the line of vision more precise. Division of the circle. Verniers. Measure and calculation of a network of triangles. Reduction of observed angles to the centres of stations.

Reduction to the horizon of a measured base on inclined ground. Reduction of angles to their horizontal value in the case where this reduction is not made by the instrument itself. Use of the plane-table and the compass for the survey of details.

(13U.) *Analytical Geometry.*

Geometry of two dimensions. Equations and formulæ of geometry: Law of homogeneity. Construction of algebraical expressions.

Rectilinear co-ordinates: Determination of a point on a plane by means of rectilinear co-ordinates. Representation of geometrical loci by equations. Transformations of rectilinear co-ordinates.

Solution of equations of the first and second degree of two variables: Construction of equations of the first degree. Problems on the straight line. Equation of the circle. Construction of equations of the second degree. Division into three kinds the curves which they represent. Of the centre, diameters and axes in curves of the second degree. Reduction of an equation of the second degree to the most simple form, by the change of co-ordinates. *Tangents*

[1] Clearly all three may also be 90°.

Tangents and Asymptotes: In any curve the co efficient of the inclination of the tangent to the axis of the abscissa is equal to the derivative of the ordinate referred to the abscissa. Examination of the asymptotes of curves. Application to curves of the second degree.

The ellipse: Equation of ellipse referred to its centre and axes. The squares of the ordinates perpendicular to one of the axes are as the products of corresponding segments of this axis.

The ordinates perpendicular to the major axis are to the corresponding ordinates of the circle described thereon in the constant ratio of the minor to the major axis. Construction of the curve by points, by means of this property. Foci, excentricity of the ellipse. The sum of the radii vectores of any point whatsoever on the ellipse, is constant and equal to the major axis. Description of the ellipse by means of this property.

Directrices. The distances of every point of the ellipse to one of the foci and the adjacent directrix of this focus are in the same ratio as the distance between the foci is to the major axis.

Equations of the tangent and the normal to any point in the ellipse. The point where the tangent meets the prolongation of one of the axes is independent of the magnitude of the other axis. Construction of the tangent in one point of the ellipse by means of this property.

The radii vectores taken from the foci to any point in the ellipse make equal angles with the tangent at this point, and on one and the same side of the line. The normal bisects the angle between the radii vectores. This property serves for the construction of a tangent to the ellipse through a point taken on the curve or through an external point.

Diameters. The chords which are divided into equal parts by a diameter are parallel to the tangent taken through the extremity of this diameter. Supplementary chords. A tangent can be taken to the ellipse through a given point on the curve or parallel to a given straight line by means of supplementary chords.

Conjugate diameters. Two conjugate diameters are always parallel to two supplementary chords, and *vice versâ*. Limit of the angle between two conjugate diameters. In every ellipse there are two equal conjugate diameters. The sum of the square of two conjugate diameters is a constant. The area of the parallelogram constructed on two conjugate diameters is constant. To construct an ellipse, knowing the two conjugate diameters and the angle they make with one another.

Expression of the area of an ellipse as a function of the lengths of its axes.

Hyperbola: Equation of the hyperbola referred to its centre and axes. Ratio of the squares of the ordinate perpendicular to the transverse axis.

Foci and directrices; tangents and normals; diameters; conjugate diameters and supplementary chords. The length of a diameter which does not meet the hyperbola. The properties of these points and lines are analogous in the hyperbola and in the ellipse.

Asymptotes of the hyperbola. The asymptotes coincide with the diagonals of the parallelogram formed by any two conjugate diameters whatsoever. The parts of a secant or of a tangent between the hyperbola and its asymptotes are equal to one another. Application to the construction of the tangent.

The rectangle of the parts of a secant between any point of the curve and the asymptotes is equal to the square of the half of the diameter to which the secant is parallel.

Form of the equation of the hyperbola referred to its asymptotes.

The parabola: Equation of the parabola referred to its axis and to the tangent at the vertex. Ratio of the squares of ordinates perpendicular to the axis.

Focus and directrix of the parabola. Every point of the curve is equally distant from the focus and the directrix. Construction of the parabola.

The parabola may be considered as the limit of an ellipse in which the great axis augments indefinitely, whilst the distance of the focus to the adjacent vertex remains constant.

Tangent and normal. Sub-tangent and sub-normal. These furnish the means of drawing a tangent to any point of the curve. The tangent makes equal angles with the axis and with the radius vector drawn to the point of contact. By means of this property, to draw a tangent to the parabola—(1) from a point situated on the curve; (2) from an external point.

Diameters. The chords which a diameter divides into two equal parts are parallel to the tangent taken to the extremity of this diameter. Expression for the area of a parabolic segment.

Polar co-ordinates: To pass from a system of right-angular co-ordinates to a system of polar co-ordinates, and *vice-versâ*.

Equations of three curves of the second degree in polar co-ordinates, the pole being a focus, and the angles being reckoned from the axis which passes through this focus.

Curved lines in general: Discussion of several algebraical and transcendental curves. Determination of the tangent from one of their points. Asymptotes of infinite branches. Construction of the real roots of equations of any form whatsoever with one unknown.

Intersection of two curves of the second degree: The number of necessary conditions for the determination of a curve of the second degree.

To calculate co-ordinates of points common to two curves of the second degree. Given the equations of two curves of the second degree, to find the general equation of the curves of the second degree which pass through the four points of their intersection.

Conical and cylindrical sections: Study of the plane sections of the cone and of a right cylinder of circular base.

(13v.) *Geometry of three dimensions.* This is still a part of the Analytical Geometry.

Theory of projections: The sum of the projections of several consecutive straight lines on an axis is equal to the projection of the resultant line. The sum of the squares of the projections of a straight line on three rectangular axes is equal to the square of this straight line. The sum of the squares of the cosines of the angles that a straight line makes with three straight rectangular axes is equal to unity.

The projection of a plane area on a plane is equal to the product of this area by the cosine of the angle between the two planes.

Rectilinear co-ordinates: Representation of a point by means of its co-ordinates. Equations of lines and surfaces. Transformation of the rectilinear co-ordinates.

The straight line and plane: Equations of the straight line. Equation of the plane. Every equation of the first degree with three variables represent a plane.

To find the equations of a straight line: (1) Passing through two given points; (2) passing through a given point, and parallel to a given line.

To determine the point of intersection of two straight lines the equations of which are known.

To define a plane so that it shall pass:—(1) through three given points; (2) through a given point and be parallel to a given plane; (3) through a point and through a given straight line. Knowing the equations of two planes, find the projection of their intersection. To draw through a given point a perpendicular to a given straight line; to determine the point of meeting and the length of this perpendicular (rectangular co-ordinates).

Knowing the equation of a straight line, to determine the angles which it makes with the rectangular axes. To find the intersection of a straight line with a plane the equations of which are known.

Knowing the co-ordinates of two points, to find their distance. From a given point a perpendicular is let fall on a plane; find the terminal thereon and the length of the perpendicular (rectangular co ordinates).

To pass through a given point a line perpendicular to a given plane. To determine a plane passing through a given point and perpendicular to a given line. Knowing the equation of a plane find the angles that it makes with the co-ordinate planes (rectangular co ordinates). To determine the angle between two planes.

Surfaces of the second degree: These are divided into two classes, according as they have or have not a centre. Co ordinates of the centre. Diametral planes. Simplification of the general equation of the second degree by the transformation of the co ordinates.

The most simple equations of the ellipsoid, of the hyperboloids of one and two sheets, of the elliptical and hyperbolic paraboloids, of cones and cylinders of the second degree.

Nature of plane sections of surfaces of the second degree. Asymptotic cone of the hyperboloid.

Rectilinear sections of the hyperboloid of one sheet. Through any point on the surface of an hyperboloid of one sheet two straight lines may be drawn; whence it results that there are two systems of rectilinear generatrices of the hyperboloid. Two straight lines taken in one and the same system do not meet, and two straight lines of different systems always meet. Every straight line on the hyperboloid if moved to the centre and maintained parallel to its original position lies exactly on the asymptotic cone. Three straight lines of one and the same system are never parallel to one and the same plane. The hyperboloid of one sheet can be generated by the motion of a straight line which touches three fixed straight lines which are not parallel to one and the same plane; and reciprocally, when a straight line moves on three fixed straight lines which are not parallel to one and the same plane, a hyperboloid of one sheet is generated.

Rectilinear sections of the hyperbolic paraboloid. On the surface of the hyperbolic paraboloid two straight lines may be drawn through any point, whence it follows that the paraboloid may be generated by two systems of straight lines. Two straight lines of the same system do not meet, but two straight lines of different systems will always meet. All the straight lines of one and the same system are parallel to one and the same plane. The hyperbolic paraboloid may be generated by the movement of a straight line on two fixed straight lines, parallel to one and the same plane, or by one straight line which moves on two fixed straight lines whilst remaining continually parallel to a given plane. Reciprocally, every resultant surface of one of these two modes of generation is a hyperbolic paraboloid. Discussion of a numerical equation of the second degree of three variables.

Conical and Cylindrical Surfaces: To find the general equation of the conical and cylindrical surfaces.

(13w.) *Descriptive Geometry.* (In this subject there are both lectures and drawing; 4 hours per week).

Problems relating to the point, straight line, and plane: Through a given point in space, to draw a straight line parallel to a given straight line, and find the length of any part of this line. Through a given point to draw a plane parallel to a given plane. To construct a plane passing through three given points in space. Two planes being given, to find the projections of their intersection.

A straight line and a plane being given, to find the projections of the point where the straight line meets the plane.

Through a given point, to draw a perpendicular to a given plane, and to construct the projections of the point of the intersection of the straight line and plane. Through a given point, to draw a straight line perpendicular to a given straight line, and to draw the projection of the point of intersection of the two straight lines. Change of the planes of projection. A plane being given, find the angles that it forms with the planes of projection.

Two planes being given, to construct the angle that they make with one another. Two straight lines which intersect being given, construct the angle that they make with one another.

To construct the angle formed by a straight line and a plane in given position.

Problems relating to Tangent Planes: To draw a plane tangent to a cylindrical or conical surface—(1) Through a point taken on the surface; (2) through a point taken without the surface; (3) parallel to a given straight line.

Through a point on a surface of revolution, the meridian of which is known, to draw a plane tangent to this surface.

Problems

Problems relating to the intersections of Surfaces: To construct a section of the surface of a right and vertical cylinder, by a plane perpendicular to one of the planes of projections. To draw the tangent to the curve of intersections. To shew the development of the cylindrical surface, and trace the curve of intersection as well as the tangent. To construct the intersection of a right cone by a plane perpendicular to one of the planes of projection. The development and tangent.

To construct a right section of an oblique cylinder. (In order to simplify the construction, the method of changing the planes of projection shall be employed.) To draw a tangent to the curve of intersection. To develope the cylindrical surface and trace the curve which will serve as its base, and also its tangents. To construct the intersection of a surface of revolution by a plane and the tangents to the curve of intersection. Solve this question when the generatrice is a straight line which does not meet the axis. To construct the intersection of two cylindrical surfaces and the tangents to this curve.

Construct the intersection of two oblique cones and the tangents to this curve.

To construct the intersection of two surfaces of revolution when the axes meet.

(13x.) *Physics and chemistry.* (6 hours per week are devoted to these, and the programme in detail is as follows):—

1°. *Physics.*

Preliminaries: Aim of physics. Phænomena. Physical laws. Experiments are intended to illustrate the phænomena. Physical theories. Different character of the experimental and the mathematical methods.

General properties of bodies: Extension. Measurements of lengths. Metre. Vernier. Cathetometer. Comparator. Micrometer screw, and spherometer. Dividing machine. Divisibility, porosity. General ideas concerning the molecular constitution of bodies. These purely hypothetical conceptions should not be confounded with physical laws. Elasticity. Mobility. Inertia. Forces. Their equilibrium; their mechanical action; their numerical evaluation.

Gravity: Direction of gravity. Plumb-line. Relation between the direction of gravity and the surface of water (at rest). Weight. Centre of gravity. Experimental study of motion produced by gravity. Disturbing influence of the air. Inclined plane of Galileo. Atwood's machine. Demonstrate by experiment: (1) the law of space traversed. (2) the law of velocities. M. Morin's apparatus. Demonstration of the law of spaces and of velocities. Law of the independence of the effect produced by a force on a body, in respect of the motion previously acquired. Law of the independence of the effects of forces acting simultaneously on one and the same body. Experimental demonstration and generalisation of these laws. Law of equality, of action and reaction. Mass. Acceleration. With equal masses the forces are as the accelerations which they produce. Relation between a force, the mass of the body on which it acts, and the acceleration which results from this action. Impact of bodies. General laws of uniformly varied motion. Formulæ. Pendulum. Law of the isochronism of small oscillations and law of lengths, deduced from observation. Method of coincidences. Employment of the pendulum for the measurement of time. Simple pendulum. Formulæ. Compound pendulum. The laws of oscillations of a compound pendulum are identical with the laws of oscillations of a simple pendulum, of which the length can be determined. Determination by means of the pendulum of the acceleration produced by gravity. This acceleration is independent of the nature of bodies.

Note that the formulæ of oscillatory motion can be applied to the comparison of forces of every kind which may be regarded as constant and parallel in all positions of the oscillating body. Identity of gravity and universal attraction. Balance. Conditions of its establishment. Sensibility. If the point of suspension of the beam and the points of attachment of the pans be exactly in a straight line, the sensibility will be independent of the weights with which the pans are waded. Method of double weighings. Details of the precautions necessary in order to obtain an exact weighing.

Definition of density. Density is the ratio of the weight of a body to its volume.

Hydrostatics and hydrodynamics: Distinction of the various states of bodies. Pascal's principle; in the interior of a liquid the pressure exercised on an element of surface is normal to the element and independent of its direction. The demonstration of this principle results from the experimental verification of its consequences. Principle of the equal transmission of pressures; if a pressure be exercised on a plane equal to a unit of surface of the liquid the pressure transmitted to any plane surface whatsoever, in the interior of the liquid or on to the walls of the vessel, is equal to the pressure exercised, multiplied by the extent of the surface in question. Verification of this principle by means of the hydraulic press.

Application of the preceding principles to heavy liquids. Direction of the free surface. Interior pressures, level surfaces. Pressure on the walls of vessels, and in particular on the bottom of the vessel. The hydrostatic paradox. Haldat's apparatus; various experiments. Principle of Archimedes. Experimental verification; theoretical demonstration deducted from the preceding principles. Floating bodies. (The conditions of stability of the equilibrium need not be considered.) Superimposed liquids. Communicating vessels. Water level. Spirit level; its use in instruments.

Density of solids and liquids. Hydrostatic balance. Areometers. Compressibility of liquids. Indicate the proper apparatus to prove it. Make clear the necessity of a correction for the compressibility of the solid envelope.

Properties common to liquids and gases. Principle of the equality of pressure in every sense. Principle of the equal transmission of pressures. Weight of gas. Pressures due to its weight. Principle of Archimedes: weight of bodies in the air and in a vacuum; ærostats.

Superimposed liquids and gases. Extension of the principle of communicating vases. Application to the barometer. Detailed

Detailed construction of the barometer. Barometers of Fortin, Gay-Lussac, and Bunten. Indicate the necessity for the ordinary corrections. Mariotte's law. Experiments of M. Regnault.
Manometer in free air. Manometer with compressed air.
Manometer of M. Bourdon. Law of the mixture of gases. Air-pumps.
Degree of vacuum. Compression machine. Torricelli's principle.
Syphons. Mariotte's vase. The fountain of Hero. Intermittent fountain.

Capillarity: Cohesion of liquids. Adherence of liquids to solids. Experimental laws of capillary phænomena.

Static Electricity: General phænomena. Distinction of conducting and non-conducting bodies. Distinction of two kinds of electricity. Separation of the two electricities by friction. Hypothesis of the electrical fluids.
Demonstration of the laws of attraction and repulsion of electric fluids. Coulomb's experiments. Loss of electricity. Influence of the air. Influence of insulating supports; of the humidity condensed on the surface of the supports.
Experimental study of the distribution of electricity on the surface of bodies. Method of proof. Property of points.
Electrification by influence. Example where a body submitted to influence is already electrified. Electric sparks. Power of points. The movement of light bodies. Electroscopes. The electrical machines of van-Marum, of Nairn, of Armstrong. Condenser with an air film. Accumulation of electricity on the surface of this apparatus. Leyden jar.
Batteries. Electrical discharges. Principal effects.
Electroscope condenser. Electrophorus. Atmospheric electricity.
Phænomena observed in a serene sky. Electricity of clouds.
Storms. Lightning. Thunder. Effects of thunderbolts. Return shock. Lightning conductors. Indication of various sources of static electricity.

Magnetism: Natural magnets: Action on iron and on steel. Artificial magnets. The attractive action appears concentrated towards the extremities of bars. Elementary idea regarding poles. Direction of a magnetic bar under the action of the earth. Reciprocal action of poles of two magnets. Denomination of poles.
Phænomena of influence. Action of a magnet upon a bar of soft iron. Action on a bar of steel. Coercive force. Effects of the rupture of a magnetised bar. Theoretical ideas on the constitution of magnets. Precise definition of poles.
Action of the earth. Of the nature of a couple. It can be sensibly destroyed by the action of a suitably-placed magnet.
Definition of declination, of inclination, of magnetic meridian.
Laws of magnetic attractions and repulsions determined by the method of oscillations. Process of magnetisation. Armatures.
Consequent points. Influence of temper, of hardening, of heat.
Magnetisation by the motion of the earth. List of magnetic metals.

(13y.) *Physics for entry into the Polytechnic.*

There is a special programme of physics for admission to the Polytechnic School (école polytechnique). In the year 1900 it stood as hereunder, and has not, so far as is known to the Commissioner, been since changed.

PROGRAMME OF PHYSICS FOR ADMISSION TO THE POLYTECHNICAL SCHOOL, 1900.

Rectilinear propagation of light, shadow, penumbra. Measure of the relative intensities of two lights; the photometers of Rumfort, of Foucault, and of Bunsen. Reflexion of light; plane and spherical mirrors.
Refraction of light. Indices of refraction: their measure. Total reflexion. Lenses. Optical instruments: Camera lucinda. Camera obscura. Magnifying glass. Microscope. Astronomical telescope. Terrestrial telescope. Galileo's telescope. Newton's telescope. Vision. Measure of the velocity of light by Foucault's and M. Fizeau's method. Dispersion of light. Solar spectrum. Achromatism of prisms and lenses. Frauenhofer lines. Instruments for the measurement of lengths: Vernier. Micrometric screw. Spherometer.

Succinct ideas concerning mechanics as a basis for the study of gravity: Uniform rectilinear movement. Rectilinear movement, uniformly varied. Velocity, acceleration: composition of these movements. Vis viva and energy.
The system of absolute units, or the C.G.S. system. Balances of precision. Law of the fall of bodies. Experimental verification. Pendulum. Measure of the intensity of gravity. Pascal's principle. Hydraulic press. General properties of liquids in equilibrium. Principle of Archimedes. Spirit-level. Cathetometer. Specific weights of solids and liquids: their measurement. Experimental laws of the capillarity. Atmospheric pressure. Barometers. Principle of Archimedes applied to gas: ærostats. Mariotte's law. Manometers. Mixture of gases. Machine of compression. Pumps. Syphon. Mariotte's vessel, water and mercury pumps.
Temperature: Measurement of the dilatation of solids, of liquids, of gases at constant pressure and constant volume. Thermometers. Determination of the density of gases. Definition and measurement of the quantities of heat. Measurement of specific heats of solids, of liquids, and of gases at constant pressure. Fusion, solidification, etc. Measurement of the heat of fusion and of solidification. Refrigerant mixtures. Vaporisation. Measurement of the maximum tension of vapour. Mixture of gases and vapour. Evaporation. Ebullition. Liquefaction of vapour and of gas. Measurement of the heat of vaporisation. Determination of the density of vapours. Hygrometry.

(13z.) 2°. *Chemistry.*

The following are the details of the programme in chemistry :—

Preliminaries : General conception of the phænomena with which chemistry is concerned. Classification of bodies as simple and compound. Divisibility of matter. Different states of body. Force of aggregation and cohesion. Chemical affinity. Law of multiple proportions. Physical and organoleptic characters which serve to define the bodies. Crystallisation of bodies. Circumstances under which bodies take a crystalline form.

Rules of chemical nomenclature. Anomalies which appear even at the present day ; chemical notations and formulæ. Division of simple bodies into metalloids and metals.

Oxygen : Different methods of preparation. Apparatus for the reception of gas : gasometers. Definition of the density of gas. Physical and chemical properties of oxygen gas. Straw with air, with oxygen.

Hydrogen : Various methods of preparation. Physical and chemical properties of this gas. Straw with hydrogen and with oxygen. Desiccation of gas. Combinations of hydrogen with oxygen. Protoxide of hydrogen (or water). Physical properties of water. Freezing. Definition of the density of vapours. Evaporation. Vapour of water in the atmosphere ; deliquescent and efflorescent substances. Distillation, alembic (retort) and various pieces of apparatus employed in the laboratories. Evaporation of saline solutions. Law of the solubility of gases in liquids. Process by the aid of which the quantity of gas dissolved in water which has remained in contact with the atmosphere is determined.

Analysis of water. Calibration and testing of divided receivers. Eudiometers. Synthesis of water by the eudiometric method. Note first the simplicity of the relations between the volumes of simple gases which combine. Synthesis of water by the combustion of hydrogen by means of oxygen from copper oxide. Analysis of water by the Voltaic cell. Various modes of expressing the composition of water. First conception of chemical equivalents and atomic weights. Hydrogen dioxide, or oxygenated water. Method of preparation. Physical and chemical properties. Catalyctic action. Analysis of the hydrogen dioxide.

Azote or nitrogen. Modes of preparation. Physical properties. Atmospheric air. Generalities on the constitution of the atmosphere. Determination of the quantities of water vapour and of carbonic acid contained in the atmosphere. Aspirator of constant flow. Determination of oxygen by absorbent reagents and by combustion in the eudiometer. Air is a *mixture* and *not a combination* of nitrogen and oxygen ; proof based on the law of the solubility of gases in water. Combinations of nitrogen with oxygen. Azotic or nitric acid. Nitric anhydride ; definite acid hydrates. Chemical properties of nitric acid in various states of concentration. Direct combination of nitrogen and oxygen under the influence of the electric spark. Preparation of nitric acid in the arts. Purification of nitric acid for commerce. Analysis of nitric acid. Protoxide of nitrogen. Preparation. Physical and chemical properties of this gas. Its analysis by potassium and in the eudiometer. Nitrogen dioxide. Preparation. Chemical properties. Solution of the nitric oxide in more or less concentrated nitric acid. Explanation of the various colorations which these solutions present. Analysis of the nitric oxide. Nitrous acid. Circumstances in which it is produced. Hyponitric acid. Its preparation and analysis. Recapitulation of the combinations of nitrogen with oxygen. Remarks on the volume and weight relations according to which nitrogen and oxygen combine in order to form these compounds. Equivalent of nitrogen. Combination of nitrogen with hydrogen, or ammonia. Circumstances under which nitrogen and hydrogen appear to combine directly. Origin of the ammoniacal compounds. Preparation of ammoniacal gas and its aqueous solution. Preparation in the arts. Physical and chemical properties of ammoniacal gas. Its analysis. Direct combination of the ammoniacal gas with hydrochloric acid gas ; remark on the relation of the volumes of these two gases which unite ; the equivalent of ammonia.

Sulphur. State in which it is found in nature. Extraction and purification of natural sulphur. Physical properties of sulphur ; Dimorphism ; peculiar phænomena which it presents at various temperatures. Its chemical properties.

Combinations of sulphur with oxygen. Sulphurous acid. Various modes of producing this gas. Physical and chemical properties. Analysis of sulphurous acid gas. The use of sulphurous acid for the bleaching of wool and silk, and to remove the fruit-stains from linen. Sulphuric acid. Its formation by the action of nitric acid on sulphur and on sulphurous acid. Sulphuric acid (mono-hydrated). Precautions to be taken in its distillation and in mixing it with water. Analysis of mono-hydrated sulphuric acid. Various definite hydrates of sulphuric acid. Nordhausen's fuming sulphuric acid ; its preparation in the Hartz. Anhydrous sulphuric acid ; its formation by the direct combination of sulphurous acid and oxygen under the influence of spongy platinum. Its extraction from Nordhausen's fuming acid. Preparation of the hydrated sulphuric acid in the arts by the English method or lead-chambers. Crystals from the lead-chambers. Hyposulphuric acid. Circumstances under which it is produced. Hyposulphurous acid. Circumstances under which it is produced. Recapitulation of the combinations of sulphur with oxygen. Determination of the equivalent of sulphur. Combinations of sulphur with hydrogen. Sulphydric acid. Its preparation. Physical and chemical properties of this gas. Sulphurous mineral waters. Analysis of sulphydric acid gas. Hydrogen disulphide. Circumstances in which it is produced.

Selenium, Tellurium : Shew merely their analogy with sulphur.

Chlorine : Preparation of this gas in laboratories and in the arts. Physical properties. Aqueous solution. Definite hydrate of chlorine. Oxidising properties of the aqueous solution of chlorine. Its employment for the bleaching of fabrics of vegetable origin.

Combinations

Combinations of chlorine with oxygen. Chloric acid ; preparation. Composition deduced from the analysis of potassium chlorate. Perchloric acid. Circumstances in which it is produced. Hypochlorous acid, chlorous and hypochloric acids. Circumstances in which these compounds are produced. Recapitulation of the combinations of chlorine with oxygen. Equivalent of chlorine. Hydrochloric acid. Direct combination of chlorine with hydrogen, under the influence of sunlight. Preparation of hydrochloric acid in laboratories and in the arts. Purification of hydrochloric acid for commerce. Analysis of hydrochloric acid gas. Combinations of chlorine with sulphur. Some words on these compounds.

Chloride of nitrogen. The circumstances in which it is produced and the precautions necessary to take in order to avoid the formation of this dangerous compound in several laboratory operations are merely to be stated.

Aqua regia : Chemical constitution of *aqua regia.* Its employment in laboratories as an oxydising and chlorinating agent.

Bromine : Reveal its complete analogy with chlorine.

Iodine : Extraction from the mother liquours of *varec.* Physical properties. Its use in medicine. Some remarks concerning the combinations of iodine with oxygen and with hydrogen. Iodide of nitrogen.

Fluorine : Its hypothetical existence[1]. Hydrofluoric acid. Preparation. Its composition deduced from the analysis of fluoride of calcium. The use of gaseous hydrofluoric acid or in solution for engraving on glass. Manner of employing it in order to engrave scales on glass of physical instruments.

Phosphorus : Physical and chemical properties. Various isomeric states. Precautions to be taken in the distillation of phosphorus. Preparation of phosphorus in the arts. Phosphoric or chemical matches. Combinations of phosphorus with oxygen. Phosphoric acid. Preparation of anhydrous acid by the direct combustion of phosphorus in oxygen or in the air. Preparation of hydrated acid by the action of nitric acid on phosphorus. Analysis of phosphoric acid. Phosphorous acid : Circumstances under which it is produced. Preparation by the action of chlorine on phosphorus in the presence of water. Hypophosphoric acid and phosphoric oxide. Circumstances in which these bodies are produced.

Recapitulation of the combinations of phosphorus with oxygen. Equivalent of phosphorus. Combinations of phosphorus with hydrogen. General method for the analysis of these bodies. Chlorides of phosphorus. Combination of phosphorus in chlorine.

Arsenic : State in which it is found in nature. Preparation. Combinations of arsenic with oxygen. Arsenious acid. Its formation in the arts by the roasting of arsenites and arseniosulphides. Isomeric states of arsenious acid. Arsenic acid. Equivalent of arsenic. Combinations of arsenic with hydrogen. Arseniuretted hydrogen. Chloride of arsenic ; merely point out its existence, and give its composition. Poisoning by arsenious acid ; characters which distinguish them ; antidotes ; examination of arsenic in poisonous cases. Marsh's apparatus.

Boron : Its preparation. Chemical properties. Boric acid. State in which it is found in nature. Chemical properties of boric acid. Its extraction from the lagoons of Tuscany. Difficulties which arise in the determination of the equivalent of boron. Boron fluoride.

Silicon : Preparation and physical properties. Silicic acid. Its existence in nature. Preparation of gelatinous silicic acid. Composition of silicic acid deducted from the analysis of silicon chloride. Difficulties arising in the determination of the equivalent of silicon and of the formula of silicic acid.

Silicon chloride. Silicon flouride and hydrofluosilicic acid.

Carbon : Various states in which carbon is found in nature, or the form it takes when it results from the decomposition of various organic matters. Diamond ; natural graphite or plumbago ; graphite of blast-furnaces ; charcoal of coal or coke ; charcoal of wood ; charcoal of fusible organic matters ; animal charcoal, soot. Variable specific weights of carbon. Absorption of gases and various soluble matters by porous charcoal. The use of animal charcoal for bleaching liquids when the coloration is due to organic matters. Carbonization of the inner side of casks for the conservation of water.

Combinations of carbon with oxygen. Carbonic acid. Various modes of formation, preparation. Physical properties of carbonic acid gas. Liquefaction of carbonic acid. Thilorier's apparatus for the preparation of liquid carbonic acid. The use of liquid carbonic acid in physical experiments which require considerable cold. Circumstances in which carbonic acid is produced in nature. Solubility of carbonic acid in water. Natural and artificial gaseous waters. Analysis of carbonic acid.

Carbon monoxide ; its production in copper furnaces. Preparation by the reaction of charcoal on carbonic acid. Preparation in laboratories by the action of concentrated sulphuric acid on oxalic acid. Physical and chemical properties of monoxide of carbon. Analysis of monoxide of carbon.

Oxalic acid ; its existence in the acid juices of certain plants. Preparation in laboratories by the action of nitric acid on sugar. Analysis of oxalic acid. General method of analysis of the combinations of carbon, hydrogen and oxygen. Recapitulation of the combinations of carbon with oxygen. Determination of the equivalent of carbon.

Some remarks on the combinations of carbon with hydrogen. Application of the eudiometric methods to the analysis of gaseous hydrogen carbides.

Carbon disulphide and sulphocarbonic acid ; its preparation in laboratories and in the arts. Analysis of disulphide carbon. Chemical analogy of carbon disulphide with carbonic dioxide. Combination of carbon with nitrogen, cyanogen. Preparation. Physical and chemical properties. Analysis of cyanogen. Cyanhydric or prussic acid. Preparation of anhydrous acid and of acid in solution. Analysis of cyanhydric acid. 14.

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[1] Fluorine was of course isolated by Moissan in 1886. The programme however is translated as found, G.H.K.

14. *Chemistry for the École Polytechnique.*—There is a special programme for admission to the école polytechnique, in chemistry as there is in physics. It is as hereunder.

PROGRAMME OF CHEMISTRY FOR ADMISSION TO THE POLYTECHNICAL SCHOOL, 1900.

Chemical nomenclature. Law of multiple proportions. Gay-Lussac's law. Proportional numbers. *Oxygen.* Various modes of preparation. Physical and chemical properties. Ozone.

Hydrogen: Various modes of preparation. Physical and chemical properties. Water. Physical properties. Composition. Synthesis by the eudiometric method. Synthesis by means of oxide of copper. Analysis by the cell. Chemical properties of water. Potable waters. Hydrogen peroxide or oxygenated water. Mode of preparation. Physical and chemical properties.

Nitrogen: Preparations. Physical and chemical properties. Air. General facts regarding the constitution of the atmosphere. Determination of the quantities of vapour and carbonic acid contained in the atmosphere. Analysis of the air. Combinations of nitrogen with oxygen. Nitric acid. Anhydrous nitric acid. Hydrated acids with definite proportions. Chemical properties. Direct combination of nitrogen and oxygen under the influence of the electric spark. Preparation of nitric acid in the arts. Purification of commercial nitric acid. Protoxide of nitrogen. Preparation. Physical and chemical properties. Analysis. Nitrogen. Dioxide. Preparations. Chemical properties. Analysis. Nitrous acid. Circumstances under which it is produced. Hyponitric acid. Preparations; properties. Combination of nitrogen with hydrogen; ammonia. Circumstances in which nitrogen and hydrogen directly combine. Origin of ammoniacal compounds. Preparation from ammoniacal gas and its aqueous dissolution. Preparation in the arts. Physical and chemical properties of ammoniacal gas. Its analysis.

Sulphur: State in which it is found in nature. Extraction and purification of natural sulphur. Physical and chemical properties. Combinations of sulphur with oxygen. Sulphurous acid. Various modes of producing this gas. Physical and chemical properties. Sulphuric acid. Nordhausen's fuming sulphuric acid. Anhydrous sulphuric acid. Preparation of hydrated sulphuric acid in the arts. Properties of mono-hydrated acid. Hydro sulphurous and hypo-sulphurous acid. Properties. Preparation. Sulphydric acid. Its preparation. Physical and chemical properties. Analysis.

Chlorine: Preparations of this gas in laboratories and in the arts. Chemical properties. Physical properties. Conceptions regarding the combinations of chlorine with oxygen. Hypochlorous and chloric acids. Hydrochloric acid. Direct combination of chlorine with hydrogen under the influence of sunlight. Preparation of hydrochloric acid in the laboratories and in the arts. Analysis of hydrochloric acid gas.

Bromine. Hydrobromic acid. *Iodine.* Properties of hydriodic acid. *Fluorine.* Hydrofluoric acid.

Phosphorus: Physical and chemical properties; allotropic states; combinations of phosphorus with oxygen. Phosphoric acids. Phosphorous acid. Hypophosphorous acid. Combinations of phosphorus with hydrogen. Chlorides of phosphorus.

Arsenic: Combinations of arsenic with oxygen. Arsenious acid. Arsenic acid. Combinations of arsenic with hydrogen and with chlorine. *Boron.* Boric acid. Chloride and fluoride of boron. *Silicon.* Silica. Silicated hydrogen. Chloride and fluoride of silicon. Hydrofluosilicic acid.

Carbon: Various kinds of carbon. Combinations of carbon with oxygen. Carbonic acid. Various modes of formation; preparation. Physical and chemical properties of carbonic acid. Liquefaction of carbonic acid. Circumstances in which carbonic acid is produced in nature. Composition of carbonic acid. Carbon monoxide. Preparation. Physical and chemical properties. Analysis. Sulphide of carbon. "Protocarburetted" hydrogen (Methane). "Bicarburetted" hydrogen (Ethylene). Preparation of these two gases. Analysis by the eudiometer. Combination of carbon with nitrogen. Cyanogen. Preparations. Physical and chemical properties. Analysis of the cyanogen. Cyanhydric acid.

Résumé. Classification of metalloids in natural families.

15. *Laboratory Manipulations:* There is a certain amount of laboratory practice that each student must undertake. The minimum is as follows:—

First manipulation: Crystallisation of sodium sulphate. Oxygen from peroxide of manganese. Oxygen from potassium chlorate. Combustion of sulphur, phosphorus, charcoal and iron in oxygen.

Second manipulation: Oxygen from peroxide of manganese and sulphuric acid. Hydrogen from iron and steam. Hydrogen from zinc and sulphuric acid. Detonation of a mixture of hydrogen and oxygen in the eudiometer.

Dry chlorine. Combustion of phosphorus, and of antimony in chlorine. Bleaching of ordinary ink of the tint of turnesol (litmus) and of red wine by chlorine.

Third manipulation: Nitrogen by phosphorus. Nitrogen by copper. Crystallisation of sulphur. Soft sulphur. Distillation of raw sulphur. Extraction of iodine. Iodide of starch. Examination of bromine.

Fourth manipulation: Decomposition of water by charcoal. Calcination of bone. Bleaching of the tint of litmus, and of red wine by bone charcoal. Analysis of the air by phosphorus and heat. Analysis of the air by hydrogen.

Fifth manipulation: Synthesis of water by oxide of copper. Extraction from air. Its analysis. Distillation of water. Experiments with lime water. Barium chloride. Silver nitrate. Ammonium. Oxalate. Calcium carbonate. Tincture campechy wood.

Sixth manipulation: Decomposition of sea salt by sulphuric acid. Preparation of hydrochloric acid and sodium sulphate. Etching glass by hydrofluoric acid. Preparation of hydriodic acid by iodine and sulphydric acid. Action of hydriodic acid on salts of lead. Action of chlorine on hydriodic acid. Preparation of hydrogen disulphide.

Seventh manipulation: Preparation of calcium phosphide. Preparation of phosphoretted hydrogen. Test of a solution of arsenious acid by Marsh's process. Solution of "emetic" (potassio-antinomerim tartrate) by the same process. Preparation of marsh gas. Preparation of olefiant gas and of Dutch liquid (ethylene dichloride).

Eighth manipulation: Preparation of ammonia in solution. Decomposition of ammonia by iron. Analysis of the gas produced. Action of dissolved chlorine on liquid ammonia. Preparation of nitrogen protoxide.

Ninth manipulation: Preparation and study of the properties of nitric acid. Preparation of nitrogen dioxide.

Tenth manipulation: Preparation of sulphurous acid. Preparation of Nordhausen's sulphuric acid. Action of sulphurous acid on nitrogen dioxide and moist air. Preparation of phosphoric acid.

Eleventh manipulation: Preparation and study of carbon monoxide and carbonic dioxide. Preparation of boric acid. Coloration of borax by metallic oxides.

Twelfth manipulation: Preparation of phosphorous chlorides, of sulphur chloride, of carbon sulphide, and of fluosilicic acid.

16. *Other Subjects.*—In the Special Mathematical Class there are also the following, viz.:—

French language (1 hour per week): Recapitulation of literary instruction; French composition.

Modern languages (2 hours per week): Theme. Translation and explanation of German or English authors.

Imitative drawing (2 hours per week).

17. *General Remarks.*—The preceding programmes have been translated in order to give a definite idea of the state of secondary education in France. It is to be remembered that these shew the character of the work done by youths *before* they enter upon the higher education of the Polytechicum or University. Compare the teaching in science with what is to be found in our own or English schools, and it will be readily understood why so many brilliant contributions and such a mass of work have their origin in Europe. It is to be remembered also that very many of the more brilliant contributors from our own country have spent some time in the various schools of Europe.

There can be no doubt as to the result of a comparison of the state of education outlined in these curricula with what is achieved in our State in any available secondary education.

It was for reasons of this character that it was essential to give in somewhat extended form the state of work done in French secondary schools, and this may be taken as fairly representative of what is done throughout Europe.

CHAPTER XVIII.

CHAPTER XVIII.

Recent Reforms in French Secondary Education.

[G. H. KNIBBS.]

1. *Introduction.*—For some time past the French Secondary System has been the subject of national solicitude, and strenuous efforts have been made with a view to ensuring that it shall adapt itself to the normal requirements of the people.

Two conspicuous improvements have taken place, viz., those referred to in Chapter XVI hereinbefore, introduced in October, 1902, and preceding that, the changes introduced in October, 1890. The earlier changes reveal very clearly the *spirit* of the modern developments of French education, and the utterances of the Minister of Public Instruction in introducing them are sufficiently weighty to command the attention of any people concerned in the reform of education. For that reason it has been thought desirable to quote[1] from the Minister's circular letter addressed, even as far back as 15th July, 1890, to the administrative and teaching-staffs of the lyceums and colleges.

2. *The General Character of Recent Reform.*—On the question of the general character of the reform the Minister expressed himself as follows:—

"The reform, the accomplishment of which is now attempted, touches the entire range of education under its three aspects: *Education of the intelligence, education of the body, education of the will*, and before all things the endeavour is to establish a just equilibrium between these three divisions of education. Our school régime, so far, has betrayed a tendency to sacrifice that necessary harmonious development for the too exclusive attainment of intellectual culture. Not only was instruction considered, quite justly, an essential division, and as (one of) the principal means of general education, but, by force of claiming an excess of attention, it became in fact the unique means, the totality of education.

"But it would be inexcusable to allow it to remain so. After those reverses which have imposed military obligations on each—after the advent of the democratic régime, which no longer permits an avoidance of the duties of citizenship, every one has realised, and the University has not been the last to understand, that our children will require something even more than select instruction, if they are to honorably discharge their whole task. *The conception of education*, which was narrowed and abased in a period in which education seemed to have less to do, *is reconstituted and elevated in every mind when education*, as always happens at decisive periods in the life of nations, *recognises all its responsibilities.*

"It is precisely this integral restoration of the conception and function of education, that the present reform—in course of preparation for nearly twenty years—has definitely aimed at in secondary teaching.

"If the education given in our colleges and lyceums has, to-day more than ever, the object of making men, nothing that pertains to man should be foreign thereto.

"As a consequence, *the Higher Council has decided that*, without any unnecessary curtailment, *some of the hours devoted to intellectual pursuits, should be taken therefrom and reserved for the unjustly disdained physical exercises.* It was desired, above all, that the questions of moral discipline, often too much neglected, should take, in the estimation of the masters of every grade, the place to which they are entitled—that is to say, the *premier* place. Finally, it was considered that the University will have well accomplished its task, only if the students leave it with a robust and flexible body, with solid instruction and sound judgment, with a will rightly directed and mistress of itself. Fortunate too, it can be considered, only if it had been able to recognise and develope among all the youths, some of distinguished talent. It was this conception of an integral and harmonious education of man which influenced all the deliberations of the Higher Council, and which has been made to assume a practical form in a programme which responds to the needs of the country and expresses the true function of the University. Any additional personal effort and devotion it may be found to require, no master will hesitate to bestow."

The letter of the Minister then went on to refer to a number of matters, for example, to the programmes and teaching in general, and to matters of general importance in connection therewith. Reference will be made to such of these as may seem worthy of more than ordinary attention.

3. *The Function of Ancient Languages.*—The place of Latin and Greek in secondary education is specially discussed in Chapter III, hereinbefore. The view of the Department of Public Instruction of France in 1890 is given hereunder. Obviously *much depends upon the point of view* taken.

There is a tendency in crude or uncultivated minds to regard only the elements that make for material wealth and material power, and to discount all those elements which constitute the adornment of the human mind.

This type of mind is—perhaps necessarily—obtrusive in young and undeveloped countries, and its influence is, therefore, to be carefully guarded against. It is the type of mind which—in the phrases of Mr. P. Chalmers Mitchell—"would give a scanty support to Botany as the provider of drugs;" would "tolerate Chemistry, because it has supplied aniline dyes," and would patronise the physical sciences from a lively sense of the convenience of telephones and telegraphs."[2]

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[1] In translating the French documents the chief aim has been to re-express the thought of the original rather than to attempt a close verbal translation.

[2] The Nature of Man;—Studies in Optimistic Philosophy, by Elie Metchnikoff, Professor at the Pasteur Institute. Engl. Transl. edit. by P. Chalmers Mitchell W. Heinemann, Lond., 1903. See p. vi.

Apart from the fact that progress depends upon the high priests of all forms of higher culture—who are not concerned with material applications—it may be noted that almost without exception, the great discoveries, upon which modern civilisation is founded, and to which it owes so much, have been brought to light by researches which had no other object than the pure investigation of nature. One might even go so far as to say that practically no great and fundamental truth has been acquired by inquiry otherwise directed than by a desire to understand Nature's processes, resources, and laws.

It is hardly necessary to remark that the French nation has long been among the most brilliant contributors to the vast treasury of human knowledge, and is not likely to err as to the point of view.

In regard to secondary education this has been expressed by the Minister in the following words:—

"The essential object of secondary teaching is obviously the harmonious development of the mind. Between primary teaching, which at first is the most urgent, at least so far as the acquisition of *immediately useful knowledge* is concerned, and the higher teaching, which aims at making scholars, viz., men capable of extending any special order of studies, secondary teaching occupies a middle position. It tends to form fine minds, possessing vigorous general culture. It assuredly imparts to students exact and consequently useful knowledge, but what is of paramount importance good habits are instilled thereby. *It has no particular profession in view, but it enables pupils to approach them all with a capital of intellectual and moral health which alone is the condition of excellence in each one of them.*"

Applying this to the question of teaching ancient languages, the Minister continued as follows:—

"The study of ancient languages should be then, in secondary education, subordinated to these essential ideas. Its main object should not be the making of professional Latinists and Hellenists. Greek and Latin are expected only to contribute their quota to the general education of the mind.

"The methodical study of a language necessarily includes three groups of exercises and studies:—(1) study of the grammatical theory; (2) written exercises in translation and composition; (3) reading and explanation of passages. It is clear that the reading of texts is the main point. The study of the grammatical theory, can, without doubt, become of itself—in capable and discreet hands—a useful instrument of intellectual culture; it accustoms the mind to reflect, to grasp, to compare, but it is especially a practical means of unravelling the literary difficulties. The written exercises, on the other hand, are indispensable for giving to grammatical knowledge all its solidity, all its precision, all its *finesse;* and, moreover, *are a potent instrument of formal culture for the intelligence, but they cultivate and refine the mind rather than strengthen it.* It is especially by the reading of passages and by the various exercises connected therewith that this necessary strength is imparted to young minds. The advantage derived from the texts is twofold. In the first place, they are the ever-living tradition of the human spirit by which the present is linked to the past; they cause the child to travel over the same road as that passed by all (? a large part of) humanity, and, in making him familiar with his ancestors, they confer on him, as it were, his real title to intellectual nobility. Than they are, for a large part, models; they initiate him into the knowledge of the true, the good, the beautiful; they awaken in his soul a sentiment of active and rich love for everything that these three words sum up; they enrich and fortify its very substance, in a word, they eminently accomplish that work which is the essential object of secondary education."

"These principles being firmly established," said the Minister, "the chief concern now is to make them practical by the attentive study of the questions regarding method and programme, which are relative to each of these three groups of school exercises." He then went on to define the view to be taken of the three elements previously mentioned.

4. *Study of Grammatical Theory.*—The circular runs as follows:—"The reforms of 1880 deferred the study of the elements of Latin until the sixth class, and the elements of Greek until the middle of the fifth class. As far as these two points are concerned there is no change." This is no longer true, the changes in October, 1902, altering the scheme, as previously explained in Chapter XVI. The Minister continues: "The question of general economy of public teaching need only be approached with prudence. It is, moreover, possible, without destroying the actual framework, to attain good results; but it is indispensable, in order that good may be the outcome of this enterprise, to see clearly the danger to which it may be exposed.

"*The first danger certainly inheres in the desire to progress too rapidly.* It is impossible for a pupil who only begins the study of Latin in the sixth to be as conversant with it at the beginning of the fifth as he who begins it in the eighth class. This truth, so clear, but so easy to disregard in practice, cannot too deeply penetrate the programmes, and the very spirit of the teaching. Only that which has been several times forgotten can be known well; the time, therefore, for forgetting and learning anew is necessary. The study of grammar, if it would be, in truth, the *point d'appui* of literary education properly so called, should be taken very slowly, very patiently, and with pauses and revisions. It ought, also, to be very simple, or, at least, very carefully graduated, according to the age of the pupil, and always proportioned to the time at his disposal. Erudition, which, in itself, is an excellent thing, may become a peril in secondary teaching if it endangers its simplicity. It is truly useful only in the precise measure in which it allows the master to substitute truth for error, to render more clear an obscure fact, or to stimulate the curiosity of the child. Nothing is more dangerous than the desire to thrust him too soon into problems beyond his age. Whilst it was believed that he had learnt the history and origin of such grammatical forms, he would, as a matter of fact, have failed to remember this very form itself, and would no longer have the time to acquire that familiarity with the language so necessary in the reading of the texts.

"Finally, the study of grammar should not cease too early. At present, especially as it commences later than formerly, it is of supreme moment that it be continued as long as possible, but transforming it according to each successive step in the mental development. It was under the inspiration of these principles that the Higher Council modified or completed, with reference to some points, the plan of studies of 1885.

"In regard to the distribution of the grammatical theory among the various classes, the sixth class was exempted from all study connected with Latin syntax. The study of regular forms, with all that the study of the forms necessarily implies of latent syntax, as it were (only by application to short phrases), is amply sufficient for the first year Latin. The study of syntax is then taken up in the fifth class; and this class, in its turn, is relieved, for the benefit of the fourth, of all theoretical and connected study on the

the derivation and the composition of words. The fourth is essentially a recapitulation class, particularly in regard to form. In the third class, the new programme maintains the recapitulation of the Latin grammar, but applied chiefly to the syntax (which already manifests a lively literary interest), and practised in a slightly different way from that which obtains in the preceding classes. Relatively to the Greek grammar, only very slight modifications were made in the present programmes, which are explained of themselves. For example: the introduction in the fifth class of the study of adverbs and prepositions, which is not an extra burden, and which forms a very natural connection with the study of the adjectives and the cases.

"In correlation with the various changes destined to more efficiently graduate the study of the grammatical theory, certain points of method should be clearly established. In the grammar classes the pupil must learn by heart, not only the paradigms of forms, but also the example-types of the syntax, with the rule connected with each of them, the professor having always the power, be it understood, to multiply parallel applications and interrogations.

"In the third class, on the contrary, the recapitulation of the grammar, under the form of textual recitation, would be tedious; but it would be an excellent thing to give to the pupils in advance a portion of a chapter to study, and to question them in class in regard to it. Before all, the professors should be penetrated with that necessity, referred to above, of graduating and simplifying, so that the proposed modifications may be extended and applied in their true spirit."

5. *The Place of Grammar in Learning a Language.*—It is obvious that considerable stress is laid upon grammar in the French secondary teaching. This question has, however, been discussed in Chapter XXII of the Interim Report. The trend of modern opinion is that the grammar should be based upon the language already acquired, so that actual command of the language should *precede* the knowledge of of its grammatical forms, not *vice versa*. (See, in particular, Chap. XXII, sect. 21, pp. 210, 211.)

It may be mentioned that the principle is accepted by the French Public Instruction Department that the study of the language must precede the study of its literature, and it is remarked "that to attempt to read Shakespeare and Goethe too early is to run the risk of never understanding them."

More and more is it recognised that the phrase, not the word, is the unit of speech.

"Another inconvenience which still remains," says the Minister in his circular, "is the false assimilation of the living languages to the dead languages. It is almost admitted to-day that Latin, especially, is learnt in order that a more natural acquaintance with French may be gained; that however, is still a somewhat restricted and strongly debatable point of view."

As regards the general method, the following supports the argument of the Interim Report:—"If, knowing French, we wish to learn German, forget for the moment the French; if knowing both French and German, we would further know English, then forget momentarily that we know either French or German. *A language is learned by itself and for itself.* It is in the language, considered by itself, that we must look for its organisation." (*Une langue s'apprend par elle-même et pour elle-même, et c'est dans la langue, prise en elle-même, qu'il faut chercher les règles de la methode.*")

The importance of avoiding the dwelling too long upon difficulties, and of the function of the history of literature, is dealt with at some length in the circular.

6. *Education of the Imagination.*—Considerable attention was paid in the Ministerial circular to various pædagogical questions,—for example to the "demonstrative method," the "pictorial method" (*la méthode pittoresque*), and so on. In connection with the teaching of geography certain remarks were made touching the education of the imagination and of the reasoning faculty, which are well worthy of special reference.

"Concerning the imagination, it is scarcely necessary to indicate by how many different ways it may be awakened and enriched by the Professor of Geography, if, by the employment of processes left to his own discretion, he takes care to exhibit suitable objects, and to employ scenes to give significance to mere names. At first they will be simple pictures, easily evoked by means of familiar comparisons, and features which can be easily fixed in the mind of the child: the monotonous aspect of a vast plain, the strangulation of a neck of land, the gaseous distensions (*boursouflures*) of volcanic ground, the position of a great town at the confluence of two rivers, a natural curiosity, a celebrated monument. It is of the utmost necessity that, behind each line of the book, and each mentioning of the map, the pupil, *distinctly perceives a reality.* This first result obtained, the master can then draw larger pictures, lifelike in character,—forasmuch as man has a place therein. In naming a port or an industrial region, he would describe the various forms of human activity. The great lakes and rivers of Central Africa would supply him with the opportunity of contrasting barbaric with civilised life. Such depictings of reality not only lend charm to geographical teaching, they constitute its essence; they are its *raison d'être.* The same thing perhaps might be said of history, but the boundary of the two teachings is very difficult to mark. If the geographical and historical imagination are not exercised in the same way, at least the foundation on which they rest are identical. The phænomena that history declares and endeavours to explain through the different ages are those that geography observes under the various latitudes. In all parts of the world, at the present time, the stone age, the patriarchal life, and the feudal régime are met with. The knowledge of human societies and the laws of progress is the common object of these two sciences; and one might almost say that, in the last analysis, geography is but history developed over the terrestrial surface."

7. *Education of the reasoning faculty.*—The exercise of the reasoning power, is complementary and corrective to the exercise of the imagination. The following remarks shew the recognition of this. They are also made *apropos* of geography.

"*Education of the Reason.*—Next in importance to the imagination is the reasoning faculty. With the picturesque alone, geography would run the risk of being only an intellectual recreation, a mere luxury in education. Only by the employment of the demonstrative method does it become a real subject of instruction. In grouping elements of knowledge of the same order, in linking cause and effect, in endeavouring to elevate facts into the laws, of which they are but the expression, it fulfils one of its

essential

essential functions, viz., that of *training the mind to form general ideas.* Physical geography will do this by forcibly pointing out the relations existing between the various phænomena; economic geography, by tracing to their natural causes the agricultural wealth or the industrial production of a region; political geography, by explaining, from the accidents of the soil and the natural resources of a country, the rôle and the real position of a people.

"Without doubt, however, it is necessary in such matters to guard against mere ambitious theories. A system of the physical, economic, and political world, that would urge its conjectures as scientific truths, and claim to give a reason for everything, would have the effect rather of warping the intelligence than of forming it. But the danger of the system is scarcely to be feared with children; for, at this age, much more is risked by not reasoning than by reasoning falsely. Moreover, geographical teaching is, perhaps, less exposed than other kinds of teaching to vain speculations. The present tangible reality, from which it borrows all its elements, preserves it from exaggerations. Its logic, necessarily established on exact principles and all its conclusions being easily verifiable, is placed under the perpetual control of common sense.

"This logic, moreover, is peculiarly appropriate to the education of the child, because from the very beginning his faculties are exercises by objects well known to him and on ideas with which he is familiar. The explanations given by the master at first will be taken from the village brook, from the neighbouring mountain, or from the works by which the country is maintained. To form the first general ideas with the first things seen, is to singularly facilitate the passage from the concrete to the abstract. It has also often been noticed that geographical teaching is, for scholars of an early age, not only one of the most accessible, but one of the most suggestive. Then if history should still be content to present to them a simple successson of scenes, geography, at least, can already reply to some of their everlasting 'why's.'"

The pædagogical principles which lie behind these remarks, are in accord with all modern conceptions of teaching.

8. *The teaching of Physical Science.*—The attitude to the question of teaching physical science is important. The circular goes on to say:—

"In the teaching of physical science, the most ordinary fault which the directions of 1854 already pointed out with as much force as authority, is that, in so far as the character of the lesson is that of a dogmatic statement, it is out of harmony with any science that is experimental. Experiments, the principle and nerve of science, should be introduced in the course not merely by way of illustration or for mere mental recreation. In physics, a proper statement of acquired truth, is, without doubt, a most useful thing. But it would be still more useful if, from the beginning, the pupils were initiated into this method, the most fruitful and the most general of all, in which well analysed facts furnish the reason with its point of departure, its rectification, or its evidence. The professor then should be required to aim at the culture of the mind in his teaching—in other words, to make his teaching *educative.* The analytical method is here the only one applicable. Upon facts well established, simple experiments, repeated before the pupils in the course of the lesson, leading to the study of more complex phænomena, he will finally reach the enunciation of the law which governs them. The pupils will be led, by questions that easily lend themselves thereto, to follow briefly the progress of the human mind, and the successive attempts through which it has passed in order to arrive at the discovery of scientific truth. This is the most striking demonstration that can be given of the influence which the judicious employment of the experimental method has exercised in regard to the development and the progress of physical science."

In the Ministerial circular there is a quotation from an instruction as far back as 1854, concerning the scheme of study in the lyceums, shewing how early the essentials of good method were practically recognised. The circular proceeds as follows:—

"In the instruction of 1854, on the plan of studies of the lyceums, a Master of Science who was also a teacher, J. B. Dumas, gave, from a very lofty point of view, analogous counsels to the professors of the physical sciences. It will not be without interest or utility to reproduce them here in part:

"The professors of some lyceums still adhere a little too much to dictating their lessons and exacting from the pupils long redactions, a proceeding calculated specially to exercise the memory, but one which is not sufficient to shew how a fact is observed, and how from a well-observed fact to deduce for oneself precise conclusions.

"Therefore, although in the courses of our lyceums the experiments are generally prepared with care and are, as a rule, successful, they do not always make that impression on the minds of the pupils that one would expect. Most frequently, the professor employs them in order to demonstrate what he has just affirmed. As he is well aware that he is taken at his word, and that, on their side, the pupils, convinced beforehand, think that they have not the least further mental effort to put forth, the experiments are relegated to a secondary position. Moreover, the professor, unintentionally passes too rapidly over the experiments, in order that there may be ample time for the dictation of his lesson.

"Thus there is nothing more easy, with the facility and reliability of memory characteristic of our young pupils, than to make them learn by heart a course, say, of chemistry. They can retain everything, general principles, formulas, figures, developments, and yet be misled as to their actual knowledge. Scarcely out of the lyceum, they will discover that they have been completely deceived, for that which cost so slight an effort to grasp will not be long retained."

"*On the other hand, if the professor really makes them understand the science, his pupils will be less brilliant perhaps, but more solid and more lasting ideas will have been confirmed.*

"That this aim may be attained, he should accustom his pupils, by frequent examples, to themselves find reasons, to draw inferences, to precisely state conclusions, to develope applications Addressing himself at first to the understanding, he should depart from the fundamental experiment whenever the subject permits of it, while determining the conditions, while placing in relief all the circumstances, he should oblige the pupils to give accounts by themselves, then should build the whole edifice of his discussion on this solid base. When such experiments are in question as those which have given birth to a great theory, as, for example, the analysis of the air by Lavoisier, those which have assisted in the discovery of a great application, as, for instance, the decolourising action of charcoal; those which adhere to phænomena of universal interest, as the combustion of carbon or of hydrogen—then instead of gliding over the details—the professor should, on the contrary, follow the whole course of the experiments, describing them as they are executed, attracting the attention of his audience, so that they shall foresee the various phases, and even announce them; explaining the accidents; in a word, doing everything necessary to concentrate the whole power of the pupils' attention on the experiments.

If the time at the disposal of the professor should permit of it, the general employment of this process would be recommended to him; for, when he in the first place affirms, and when he after proves, he must possess the great art of stimulating interest; a problem being, on the other hand, given by nature, if professor and pupils strive in concert to solve the audience is spontaneously aroused. "To

"To present chemistry as a purely mental conception, and the facts as complemental information, which strictly might be allowed to pass, is not teaching chemistry, but a false science, which could only develope presumptuous young people . . . . . .

"In the physics course, the explanation of the phænomena and the theories would be very profitably preceded by an aperçu of the progress of science. The young men will see in these indications by what kind of reasoning the greater part of these discoveries have been made or extended."

9. *Instruction in Drawing.*—The teaching of drawing in primary schools was discussed at some length in chapters XX and XXI of the Interim Report, see pp. 181–196. Considerable importance is attached to the subject as one of moment in secondary education. The Circular refers to it in the following terms:—

"A knowledge of drawing has always been considered as indispensable in the practice of certain professions. In most of the old corporations, it constituted an essential element of apprenticeship; for the artist, it remains an occupation for the whole of his life. It has always been taught to those engaged in such work where a knowledge of it would be essential. But before the end of last century it was not admitted into the material of general instruction. It was only during the Revolution that it found a place in the programmes of public instruction. It is said that Aristotle's idea, who considered it the complement of a liberal education, held sway, at that period. But something more was demanded of it; it was thought that it ought to be an obligatory subject of study, by reason of the numerous applications of which it permits, either as an element of appreciation and criticism, or as an exercise for the eye and hand. It was then decided to introduce it into schools of every grade. The promoters of this measure had specially in view the service it could render in a great number of careers. No doubt, too, they remembered that it is one of the means best qualified to initiate the youth into the arts and to form the taste. It should be viewed, however, rather from its most general aspect, that it, as being a medium of a universal and the most widely communicative language."

"But very soon the opinion formed concerning its rôle in general education was modified. It was more agreeable to consider it rather in its relation to painting and the fine arts; it was classed among the accomplishments. This had the effect of singularly reducing the conception that had been formed of its universality. It became then, as it were, an aristocratic subject of instruction, intended for those only who had a taste for it, and which proceeding without method was, consequently, an aimless recreation. The University, at its foundation, was not unacquainted with this derogation of the idea which had guided the first organisers of public instruction. We are amazed that, at the present day, drawing should be ranked among the accomplishments. Nothing, however, was more natural from the moment it was uniquely associated with the fine arts. At the beginning of our century philosophy was still unspiritual; it did not allow in the arts the conception of a higher ideal. Diderot saw in the beautiful merely a series of very various relations. Only that which was pleasing to the senses, as opposed to the true and grand, was acknowledged; and this being the direction in which the arts would necessarily tend, drawing, with which it is connected, should also be considered as responding to this conception. This was a tradition of the eighteenth century, and it has for a long time been in the ascendancy.

"Logically, the official philosophy having changed, this erroneous conception should also have vanished sixty years ago at least. *To-day, in making drawing obligatory, it has been sufficiently shewn that it is regarded as constituting an essential part of education.* It was recognised that it does not only raise sentiment, but that it proceeds on a rational method, and that its numerous applications being given, the State's duty is now to give to all citizens a proper conception of it. To-day, the primary character of drawing is well defined; but that having been acquired, should it not be a means in the higher classes of initiating the pupils into the arts, as they are initiated into letters by the humanities, to the sciences by the study of mathematics, of physics, and chemistry? It is not yet contemplated to demand that a drawing test be added to the baccalaureat. In the meantime a certain discredit cleaves to it, because it has neither clearly defined object nor sanction.

"If sentiment only be raised, if the ability to draw be acquired only by exercises avoiding every justification, then drawing does not merit a place in the scheme of public instruction. Variable systems would be employed in the teaching, and, properly speaking, there would be neither method nor unity. The professor would be without positive authority, and the results obtained would be without surety. They could only be judged from the point of view of sentiment; their accuracy, as their errors, could not be ascertained. But in reality this is not so. It is easily seen that, in the operations of drawing, nothing escapes a sure method and a rigorous control.

"M. Duruy, while Minister of Public Instruction, had intended to restore to the teaching of drawing its true character; but, failing to realise this reform through limit of time, he at least disclosed its great importance by giving it a place in the general conference of the lyceums of Paris.

"In 1879, after a lapse of ten years, the task was successively resumed by M. Bardoux and M. Jules Ferry. Under the administration of the latter, the Higher Council of Public Instruction adopted a method and formulated programmes, so that drawing could be regularly taught, from the straight line to the landscape and human figure, beginning with the primary classes, and ending with the close of the secondary studies. This whole arrangement has been applied in all university establishments, and the administration possesses the exact statistics of this teaching. It is thoroughly acquainted with its method and success in each lyceum and college. This information is supplied by the special inspectors (inspectors of the teaching of drawing), who make a yearly visit to each of these establishments without exception. The accuracy of these reports could easily be verified at the Universal Exhibition. A special jury, composed of artists, manufacturers, and professors of drawing, judged the value of the efforts made during the last ten years, in order to put our country on the same level as that attained by other nations more than twenty years ago. This judgment was favourable.

"It is important to reveal here the theory of drawing such as that adopted by the Higher Council of Public Instruction, the views according to which its teaching is ruled, and the practical means in use in order to ensure success."

10. *Methodology of Drawing.*—In section 20 of Chapter XXI of the Interim Report, the desirability of framing regulations in the light of the deliberations of the second International Congress is urged, and certain general recommendations are made. Although the question is there discussed at some length, the following translation of the circular of July, 1890, is an addition of value, especially as shewing the attitude to this branch of instruction in the secondary schools. It may be pointed out here that if explicit instructions of this kind are deemed to be necessary in the case of the highly-educated secondary teachers of France, they may not be wholly unnecessary elsewhere. They are translated, to shew the explicit character of the circular.

It may be pointed out, also, that there are popular misconceptions as to the difficulties of representing in just perspective the objects of nature. In regard to light and shade, the physiological law of contrast, of course, modifies the abstract law of relative intensity of light and shade, while distance diminishes both contrast and colour intensity. On the other hand, distance reveals the general tone more and more completely as it increases.

Form,

Form, as represented on a plane, is purely mathematical—a fact to which the circular hereunder draws prominent attention.

The following is a free translation:—

"Drawing, if one would possess a true conception of it, should be considered in itself; one must confine himself to its general principles. Nothing would be more calculated to vitiate the essential idea than, while studying it, to allow oneself to become absorbed in some of its applications. Thus, to whatever account the pupil may be called to turn it later, it must, first of all, in respect of teaching, be regarded in its essence and in its processes; it must be revealed at once, both in its modes and in its unity. These principles are of a very general and strictly elementary character; they are, so to speak, of universal utility, and that is why drawing is prescribed in the programmes of all schools. Obviously, there is no need to enumerate the arts, the trades, and all the professions for which it is an indispensable instrument. The least reflection will suffice for the comprehension of the extent of its applications.

"Taken in itself, drawing is a representation, and essentially a representation by line, by contour. To represent things by a line which marks their limit, is the instinctive proceeding of primitive man and of the child; it is the manifestation of our graphical faculty. At the same time it may be said that this proceeding is perfectly rational; science knows no other way of expressing the place that the forms occupy in space and the characteristic points in which they end.

"If the practice of drawing be now considered it will be recognised that *objects can be represented only in two ways: either as they really are, or as we see them.* It is impossible to conceive a representation which these two modes do not cover. In order to represent objects as they really are, they should be shewn in their true dimensions, either increased or diminished, provided that, in this transcription, all their parts retain their proportional relations to one another. It is known that these relations or *rapports* are of three kinds: relations of length, of breadth, and depth, which constitute the possible dimensions of objects.

"In this sense, the model to be reproduced may be to two or three dimensions, provided that it consist of a plane figure or a solid. The work of the designer consists in making this model while keeping strict account of its dimensions.

"In order to obtain this result, recourse must be had to a system of measures which establishes, by means of numbers, the relations of the parts with the whole, and of the whole with the parts. These measures determine the essential points through which the external or internal contours of the object pass; they include and exactly represent the model. The drawing obtained in that way is the plan of the object represented, and it may be said that it virtually contains it.

"It may easily be understood what advantage can be derived from a like design. Placed in the hands of workmen with the ability to read it, it gives them the means of reproducing accurately the original. Thanks to it, they make it with such precision, that if several of them were to execute the same reproduction, the copies obtained may be confounded with one another.

"In that way, this kind of drawing renders the greatest service to all the professions whose object is to construct, to create forms, or simply to multiply images. It is a means of communication of a value so great that nothing could replace it. No description would present an equivalent. Affording at the same time both the forms and their measures, the dimensions and their justifications, it is an instrument of work for the architect, the engineer, and for every artist and artisan, both indispensable and without an equal.

"This kind of drawing bears the name of *geometral*[1] drawing. It is purely mathematical in its essence and in its processes; its certainty is absolute. But strictly, it is an abstraction. It represents objects in their entirety; nevertheless, such is the conformation of our eyes, that we only see things, as so represented, exceptionally. Optically, we never perceive them unless by a point which corresponds, in the eye, to that in which the vision is the most sensitive. However rapid the glance may be, we embrace with difficulty the totality of what is placed before us. As a consequence of this, we do not, as a rule, see objects in their true symmetry, which arises from their position in relation to the direction of our eyes and to their greater or less distance. Under these conditions, *things must be represented as they appear to us*, and that is then what is essentially intended in a painting. The space is there occupied by bodies of various forms, placed at different distances, and presenting various aspects; it is clearly thus that we must perceive the domain of the picturesque. If then we can *geometrally* render objects as they really are, can we not, with equal certainty, represent them such as we see them? Without doubt! A science exists which is the key to it, viz., the *science of perspective.* It restores objects as perceived from a single point of view and reconstitutes the conditions of vision in the picture.

"*The difficulty we encounter in seeing and drawing in perspective is very singular; in principle we seem to be repugnant to it. Nevertheless, drawing in perspective is drawing objects as we really see them.* But, by instinct, we are disposed to represent objects, not as we perceive them, but as we know them to be. Graphic representation is a matter which seems to depend rather on knowledge rather than on direct observation. Nevertheless, obedience to the laws of perspective is imposed on us in the same way as respect for truth; it is at once a necessity and a duty. The application of its rules gives to work an indisputable authority. And how could it be otherwise, since the solutions obtained are characterised by truths at once physiological and mathematical?

"Thus understood, drawing becomes a science of observation and an exercise in which the eye and the hand are concerned as a sequel to mental study. It is the observation being trained under scientific conditions by means of absolutely rigorous operations, having the power to serve as well for initial means as for control.

"Consequently, it may be said, that according to whatever way it may be viewed, whether it be as a representation of objects such as they are, or as a picture of what is presented to our eyes, an absolute precision is always manifested in its results; it is an instrument of exact nature. Thus whether geometral or perspective drawing be the point in question, it gives a true representation of things. Certainly, one may take pleasure in its exercise; but *remembering the means at its disposal and its range, the idea that it should be regarded merely as an accomplishment is by no means adequate.*

"Now, if the operations of drawing be reflected upon, it will be recognised that in order to reproduce things exactly as we see them, we must know them as they are. In practice, inaccessible objects have most frequently to be represented, and to the correct performance of this, the said perspective of observation

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[1] In the Interim Report the difference between *geometral* and geometrical drawing is noticed. Chap. XXI, sec. 2, p. 185.

observation lends its aid. But in the exercises of purely geometrical perspective, one proceeds from a geometral sketch. Hence, one passes from one mode of drawing to the other. And this is absolute; for if it be possible to put under the conditions of perspective an object determined geometrally, it is also possible to operate inversely and reconstitute a geometral drawing from its perspective. This double faculty of transposing pictures constitutes, in the last analysis, the unity of drawing.

"What has just been said concerning outline applies equally to the effect. Thus, when shadows are in question, whether the shadows of the body itself or the shadows which it casts are to be determined, the proceeding will still be mathematical. And by this means again the lines, as well as the relative intensity of light and shade, the model, in a word, come to be truths of a scientific order, and are thereby placed above discussion.

"*To sum up therefore, there is nothing embraced in drawing which cannot be established mathematically. What is true of the outline and shades is equally so of the development of the surfaces. There is not a faithfully drawn line for which there is no reason.*[1]

The technical language of the designer, of the artist, does not differ from that of the geometer. Lines, surfaces, planes, equilibrium, symmetry, proportion, are terms which are employed in the same sense by both scholars and artists. There is therefore a close bond of union between art and science, and its confirmation may be found in this expression so exact and so truly French: the science of drawing.

"To drawing as a science—its positive side, the teaching should first of all be directed. But in order that misconceptions may not arise, this does not mean the arbitrary employment of the rule and compass in diagram work; quite the reverse, drawing is especially, in the lyceum, a study of the eye and the hand. But this exercise is methodical, and accuracy should be its chief aim, as has been observed in the elementary teaching of languages. Drawing is, when thoroughly grasped, really a language, and it has therefore its grammar. Here, the particular taste of the pupil and his vocation should not be presumed any more than in the primary school, and *in the primary classes of the lyceum and college it should not be considered whether such and such a child will be a poet, an orator, or an historian.* But an endeavour should be made to place at the disposal of all the orthography, so to speak, of drawing, as an indispensable instrument, with this idea ever in view, that *whatever the career embraced, above all, the correct methods of speaking and writing should be familiar.*

"It is true that the application of drawing to the fine-arts is one that most engrosses the mind, and is one also of the most important. Architecture, sculpture, and painting form the group of the arts of drawing. Must then preference be given to this particular side of the teaching. *In our opinion, it is preferable to teach drawing as though the career of artist or engineer were non-existent.* The vocations are decided by themselves. But the idea is not meant to be conveyed thereby, that the occasion which the study of drawing presents for the cultivation, in a general way, of the taste of the pupils of the different grades of instruction, and, therefore, of the public taste, should be neglected. It is first of all by the wise selection of models that this end will be attained. These should be taken from among the master-pieces of art and of those which present the most excellent types. When then it becomes a question of ornaments, elements of architecture, figures, the various parts of machinery, models of construction, or, with greater reason, great ensembles, the finest and most finished among the existing examples should be presented to the pupils. The masters should endeavour to indicate their merit. At the same time the professors of the humanities and history could find in the figured monuments valuable auxiliaries for their lessons, and the professors of philosophy could refer to the collection of models by way of illustration in their lectures on æsthetics. With respect to this, there is, it seems much to be done. But pædagogy requires to be kept in its domain, and the professor of drawing should confine himself principally to the teaching of drawing.

"Drawing is obligatory in the primary and secondary establishments of the University. In both it is regulated according to the same method: but the programmes are more or less developed according to the grade of teaching; in their elementary part, however, they are identical. In the primary classes, whatever they may be, the essential conception of drawing is given, and it is on this fundamental and impersonal conception that it is important to insist. It contains all the rest, and to make it penetrate the mind of the child should be the end earnestly sought by the teacher."

The above represents the French view of this important subject, and the reader will doubtless recognise that the cue given to the educational authorities is one which is worthy of the important department of education.

Recent revision of the question has modified the above in no essential particular.

11. *The Use of Models.*—The same careful attention is given to the question of the models which should be found in an educational establishment. The following is translated from the circular:—

"A collection of models is formed which is in some degree the representation of the methods. Each of the selections composing it, correspond to an essential part of the programme, and their ensemble manifests the reason. If this collection were augmented, it would serve as a nucleus for a little museum, which would be very beneficially located in the lyceums and colleges. One would indeed be inclined to give to the collection of models the character of a gallery. It would be a prolific means of compelling attention, and if some books were added, of making them serve in various ways as references, of which we shall speak later. Their selection has been subjected to a very severe examination. They have been chosen from amongst the most remarkable specimens of art, the masterpieces of antiquity, of the Middle Ages and the Renaissance; they are, however, for the most part, borrowed from classic antiquity. It is by the inspection of these fine examples that the taste of the pupils will be awakened, and that, by degrees, it will be formed. The success of this appeal to the taste will depend on the special professor, and also, in my opinion, on the professors of history, of literature, and philosophy.

The models have been catalogued in the same order as that in which they are employed in the class. Were it only in the interests of pædagogy, it were important to dwell on their principal features in order to reveal their production and character. It is necessary to insist on their value, at first from the point of view of the teaching of drawing, and then from that of art and history.

"Those which are called mural models consist of large pictures or designs drawn on the blackboard by the professor; they may belong to the purely geometrical order, or appear in the category or are ornaments taken from architecture or flowers. In this last case the *motifs* will be borrowed only from the ancient and modern arts, and they must be selected with care. But, in order that the characteristics of primary models may distinguish them, it is expedient that they present in the analysis an easy occasion of determining, what would be produced if one of the elements which compose

[1] A great deal of nonsense is often heard as to the difficulty of perspective in paintings.

compose them could be taken for a unity of measure. In that way the pupil will be initiated into seeking in his work the relation of a part to the whole; and he will grasp from the very beginning the correct methods of procedure, by the methods of comparison or of comparative evaluations.

"The models which follow are geometrical figures in relief. They have not, strictly, any æsthetic signification, although occasionally, when developed in colossal proportions, they produce, as is the case with the Pyramids of Egypt, a profound impression. But here, the geometrical figures represented by actual solids, or by their schemes in iron-wire, have great importance; they serve to establish by observation the principles of perspective, and to exercise the eye in nice appreciation, the hand in rigorous sketches, by which a basis is established for the teaching of drawing and its practice.

"About the same time, the pupil acquires practice by drawing ornaments in relief. There are at first dentils (No. 2,839 in the catalogue), dentils belonging to the cornice of a temple of Corinthian order situated in the Roman Forum, at the foot of the Palatine Hill. This temple, now in ruins, has but three coloumns surmounted by their entablatures. Considered from the first as the remnants of the Græcostasis, they are known to day by the name of the columns of the temple of Jupiter Stator, and also of the temple of Castor and Pollux or of the Dioscuri. From the elegance of the proportions and the taste of the decorations, this temple can be regarded as one of the masterpieces of Roman art. It is believed to belong to the time of Augustus. Two columns with their entablatures have been restored and placed in the glazed court of the Ecole des Beaux Arts. Fragments recovered in the excavations of 1872 and 1873 have given the seal of truth to this restoration.

"The temple of the Dioscuri has been put greatly under contribution for our models. The dentils of which we speak are reduced to one-half the original.

"The ovolos belonging to the same period (No. 2,739), are borrowed from the cornice of the temple of Mars Ultor, an edifice also of the Corinthian order, the remnants of which may be seen in the Forum of Augustus, and which equally appertain to the finest period of Roman art. The ogees, which bear the No. 2,740, come also from this monument. The Greek frieze (No. 2,942) is of unknown production. The rose work inscribed under Nos. 2,934 and 2,936 decorate the coping stones of the stairways of the old Hôtel de Ville of Paris.

"The acanthus leaves, No. 1,085, is taken from one of the capitals of the temple of the Dioscuri, and the acanthus leaves (No. 2,777), from one of the capitals of the temple of Mars Ultor, as stated in the catalogue.

"The '*rosace fleuron*' (the rose-work, No. 1,086), adorns the crown of the cornice of the temple of the Dioscuri. Model No. 2,842, is the crown of a Greek stela (pillar, στήλη; the model, No. 405, is similar, the latter bears the name of Numenius; the model, No. 406, is of the same nature and of the same style; the name of Philocares is inscribed thereon. The originals of these three fragments are in the museum of the Louvre. In short, the crown of stela No. 751 is a moulding, the model of which is at Athens. The frieze with foliage, No. 2,741, decorated, in all probability, the frieze of a Roman edifice of Corinthian order.

"Nos. 2,786, 2,796, and 2,770 are different fragments of the Doric order from the theatre of Marcellus. Nos. 2,772, 2,773, 2,774, 2,775, and 2,776 are fragments of the Ionic order from the same monument. This edifice is in Rome; it was destroyed by Augustus. Its ruins have only preserved two of the orders which decorated it; they are of a most remarkable character. They reveal the transformation of the Greek orders by the Roman, in view of special applications. All these pieces are restored; they are a moiety of the originals. *In general all these restorations have been made so that the models may serve as well for geometrical drawing as for drawing by eye.*

"Now, we come to models of another order; they are those which have for their object the preparation of pupils in the representation of the human figure. They first of all draw the head from one of the *écorchés* of Houdon, a study in which the anatomy is as in life, and not as in a cadaver; and which has also this advantage, of presenting science under the conditions of art, as much from the point of view of the proportions as of the interpretation of the form. (This head is No. 1,143.) Then follow the colossal mask of Juno, one of the finest marbles of the ancient Villa Ludovisi at Rome (No. 1,497); the mask of Dante, the original of which is at Florence (No. 2,146); the admirable bust of Ariani, which is in Rome, at the Museum of the Capitol (No. 1,589); the mask of Omphale, which is in Berlin (No. 1,340); and the mask of Lucius Verus, drawn from the bust, the original of which is at the Louvre. Nothing need be said regarding the Ionic capital, from the theatre of Marcellus (No. 2,773). The original of the head of a lion (2,778) is in Rome, in the museum of the Capitol. Nos. 102 and 100 are fragments of friezes of the Roman style. The first represents a Chimæra—the original is in the museum of the Vatican; the second which bears a gryphon, is of unknown production.

"The three vases of different shapes—Nos. 2,868, 2,869, and 2,870—were executed according to the originals in terra cotta in the Museum of the Louvre. The large *molosse*, the head of which is represented under No. 2,625, and the head of a horse (No. 676), come from the Galleria Uffizi, at Florence. Of these pieces, the first is mounted in marble and and the second in bronze.

"Passing now to the bas-reliefs affording examples of the entire human figure, we have No. 1,271, a dancing woman, a fragment from the Villa Albani; No. 2,941, a Bacchante dancing and playing castanets, with a Faun playing on the flute. These decorate a Borghese vase at the Louvre. No. 1,514, a return from the hunt, or from the Mænades, also at the Louvre; and, lastly, No. 218, a Faun with a panther, the model of which is preserved in the museum of the Vatican. The originals of all these works are in marble.

"The study of the elements of the human figure call for the use of various kinds of models: écorchés, casts from nature, and casts from the masterpieces of sculpture. The Farnese Hercules, a foot of which the pupils should draw (No. 1,970) is a colossal statue in marble, which belongs to the museum of Naples. The two legs of the Faun with a child (Nos. 1,478, 1,479) are fragments of the celebrated group which is at the Louvre museum, and which also bears the name of "Silenus carrying the young Bacchus." The Germanicus, another beautiful antique statue of the Louvre, has supplied the two limbs numbered 1,471 and 1,472. The original of the torso, called "l'Amour grec" (No. 1,378), is a marble from the museum of the Vatican. Of the busts contained in the programme, the first, the "Young Brutus" (No. 1,473), is at the Capitol; the second, Agrippa (No. 1,451), is at the Louvre; the third, that of Voltaire (No. 1,301), is the head of the seated statue of Voltaire which is in the lobby of the "Comédie Française," and is a production of the French sculptor Houdon; the fourth, called Cicero (No. 1,588), is in Rome, in the museum of the Capitol. All the originals are in marble. The bust known as the Banchetto d'Icaria (Indian Bacchus, No. 1,908) is the moulding of a bronze bust belonging to the museum of Naples.

"The models which are intended for drawing studies in the higher classes, from the third onward, present, in general, whole figures, and have, from the point of view of art, a very marked signification. In the first place, there is the Corinthian capital of the temple of the Dioscuri (No. 2,824); then a Gothic capital of the 13th century, taken from Notre Dame of Paris (No. 1,403); a pilaster-capital from the castle of Gaillon, which belonged to the French Renaissance (No. 1,599); and, finally (No. 2,912), a fragment of the flower-work which decorates the higher part of the Choragic Monument of Lysicrates at Athens.

"The choragic monuments are those which were raised in honor of citizens who, charged with organising and directing choirs of music at public festivals and competitions, had won victory. Of the vases, Nos. 304 and 1,198, the former ornamented by a dance of Mænades, forms part of the collection of the Villa Albani, in Rome; the second is in London. Both are in marble. The ornament, No. 1,075, composed of palm-leaves and *culots*, decorated the architrave of the entablature of the temple of the Dioscuri; it is of the magnitude of the original. The fragment of frieze found in the Forum of Trajan, at Rome, belonged to the entablature of an edifice of Corinthian order; it is preserved in the museum of the Vatican. Concerning the pieces numbered 2,431, 2,430, 2,435, and 2,436, the originals were at one time in the Boulaq Museum, at Cairo; they are now in the palace set apart for this museum. No. 1,316 is a dog's head, by Benvenuti Cellini; it is cast in bronze from the great bas-relief which represents the nymph of Fontainebleau. The bull in alto-relievo (No. 2,088), was obtained from the museum of the Vatican, together with the bas-relief cow and bull (Nos. 349 and 368).

"We must now consider the models from which the *ensemble* of the human figure can be studied; they reproduce some of the most beautiful ancient and modern statues. We have only here to indicate the production; perhaps it will be necessary to enter more into detail. But for the sake of brevity, we shall say that Achilles Borghese (No. 2,815) is at the Louvre, and the Discobolus (No. 2,816) at the Vatican; they are reductions from the originals. The Faun and the kid (No. 2,818) is in the Madrid Museum; it is in its original proportions; so also is Urania (No. 1,337), which is at the Vatican.

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"The original of the Slave of Michelangelo is at the Louvre, in the sculpture museum of the Renaissance. Our plaster (No. 2,814) is a reduction. The "Thorn Extractor" (No. 1,388) is moulded according to the bronze model which is preserved in the museum of the Capitol at Rome. The Dancing Faun was found at Pompei, in an antique house to which it has given its name; the plaster (No. 864) is also the same size as the model. The Gladiator fighting (No. 2,919) is a reduction from the original, which is at the Louvre. Concerning Sophocles (No. 605), the original is at Rome, in the museum of *San Giovanni, in Laterano.*"

It will be seen from the above that the selections are made with care, and are such as to greatly assist in the development of the æsthesis of those who pass through the secondary schools.

12. *Practical directions as to Drawing.*—The preceding section reveals what a wealth of auxiliary is available to the drawing-masters of French secondary schools. The Education Department, nevertheless, has thought fit to offer practical advice as to procedure. Translating again from the circular, it runs somewhat as follows:—

"Drawing, as organised for the past ten years, is regularly taught in the secondary establishments, The direction of this instruction possesses statistical tables giving the most complete information concerning it. All the lyceums and colleges, without exception, take their place in the instruction. By consulting these documents one may ascertain the nature of the buildings set apart for the drawing-class, their situation and lighting, the state of the collection of models, the number of pupils who attend the courses, and the ability of their masters. These books give reliable information. Since, all these establishments were represented at the Exposition Universelle of 1889, an excellent opportunity was given to all interested to see in what measure reasonable expectations are met.

"The programmes used in the lyceums and colleges are literally those which have been adopted by the Higher Council of Public Instruction. The professors are charged with the maintenance of both spirit and letter. In principle, drawing should be taught as a sure means of representation, and before furnishing exact pictures. It is taught in its elements as a figurative language, subjected to fixed rules, as a transcription which should not violate the truth. Its exact essence and the processes which assure its accuracy should be made clear from the very first. A solid basis is thus established upon which all applications whatsoever depend for support. Dominated by this spirit the professor, without entering into abstract developments, should direct the first attempts of the beginner. Mechanical exercises which leave their understandings a blank, he must be careful to avoid. He must train them from the beginning in a certain class of observations. Thus, they will be enabled to execute free-hand and without the help of the rule and compass, the linear outlines which form the elementary studies. This is an excellent exercise for training the eye to appreciation, the hand to accuracy, these being, for the ulterior practice of drawing, of the first necessity.

"The character of the teaching must be collective. A certain number of pupils will be grouped around the same model. If this model be in relief, the professor should previously attend to the seating arrangements so that each pupil may be conveniently placed.

"The rooms for drawing are often most inconveniently arranged. Their construction and treatment has seldom been thought of, in view of their special object. The professor should endeavour to guard against whatever may be defective in the lighting, by means of screens, so that the light may come from one side only and as much as possible from above at an angle of 45 degrees. To save time, the charts and models should be in their proper places, so that the class-room may be ready when the pupils arrive. This room should be so lighted that if the model be an object in relief, its principal part will not be in shadow. If the model be flat, it will be hung on the wall or sketched on the board also before the lesson.

"The models afford a graduated series, which it is necessary, as much as possible, to pass in review. Too great a number of sittings should not be devoted to them. In the first the professor will give oral explanations of them. These will be brief but substantial. The programme of the drawing begins with the straight line, in order to come by degrees to the human figure. In proportion as it is developed, comments become more and more necessary. When the pupil begins to draw geometrical solids explanations become indispensable. With the help of schemes of these representations, executed with iron wire, the master is enabled to make immediately perceptible the phænomena of perspective, and in consequence is led to give the first practical ideas from this science. Several pupils draw at the same time the same model, each of them, from his position seeing this model under a different aspect and with particular deformations. The multiplicity of cases, the solution of which is referred to a number of small rules, notably assists in the understanding of this science, which, in the opinion of Leonardo da Vinci, is the essence of graphic drawing. This multiplicity renders the perspective phænomena altogether more perceptible and more intelligible. In order to further assist, the explanations of the professor should always be given aloud. It it is always insisted that in the drawings of the pupils, the normal vertical and the line of the horizon shall remain visible unto the end. As the pupil will receive at the same time the first lesson in geometrical drawing, he will become initiated thereby into drawing in its entirety; he will acquire an integral idea of it. Indeed, the master must not fail to explain how these two modes of drawing mutually assist, and how the one is embraced in the other.

"While being initiated into these accurate conceptions, the pupil will be interestingly occupied, in copying models of ornaments in relief. The examples of this kind are, in general, borrowed from the finest antique monuments. They will afford the master an excellent opportunity of speaking of these edifices and also to infuse into the mind of his listeners the first ideas of the history of the art. At an early stage, these models are but fragments; but *they are stamped by the genius of Greece and Rome, and form very appropriate studies for the pupils who, simultaneously in their other classes, study the history of the Greeks and Romans.*

"The attention of the pupils is more strongly attracted and fixed when the human head is the subject of the drawing. More general and more delicate explanations on the perspective are attached to this exercise, in which, independently of the bust itself, the round or square pedestal on which it rests, has always to be represented. This element should never be neglected. As to the head itself, an account cannot be given of the lines that it presents, without having at first drawn the vertical normal and the horizontal line. The understanding of the optical modifications of the forms depends on the thorough inculcation of these first principles. But here, for his corrections and demonstrations the professor should call to his assistance other ideas likewise of an exact nature. Anatomy, the essential elements of which he must teach, will impart a new interest to his observations. The construction of the head is unvarying, and the various elements which constitute it are again met with in all the models. Each outline has its reason. From them arise a great number of abstract considerations, of object lessons of a particular class, calculated to interest the pupil. But, independently of the forms, there is in the human head both character and expression. The character varies according as the work of art is Greek or Roman, and, as at the same time, it is individual, so it is infinitely varied. Thus the mythological personages belong to an ideal world, which is not the case with historic personages. The task of the professor is to indicate all that in a few words; and all that will be of service to him for his corrections. And if, *à propos* of architecture, he has been led to speak about the various orders, then *à propos* of sculpture he will also have said something concerning the symbolic. Meanwhile the pupil advances in his studies; and, while thoroughly applying the rules of drawing in all their rigour, he acquires ideas on the arts and his taste begins to be formed. Thanks to this direction, he becomes absorbed in, and keenly enjoys, the lessons of his master.

"When the pupil begins to draw large pieces of ornament, fragments of architecture, whole figures, he acquires a more complete conception of the masterpieces of classic art. What the professor can then tell him would be more important still from the point of view of taste. The mind becomes cultivated by drawing capitals and entablatures of the Doric, Ionic, and Corinthian orders. It would be well to allow the pupils to completely abandon themselves to them for a time, so that their inner significance may be gradually revealed, even as when one dwells on some passage, in the presence of some new idea which it is of supreme moment should penetrate and be assimilated by the intellect, while paying strict regard to the form with which the writer has clothed it. This is a work in which the pupil should be assisted by the master. He, by his reflections, will interest the pupil in the forms, in the proportions, and will sustain him in his work, which should be of some duration, by continually appealing to the mind to lend its assistance to the hand.

"The study of the figure necessitates also a knowledge of anatomy for the sake of correction, and, with it, other considerations which the programme should not fail to turn to account. They are those which treat of equilibrium, so that it can be analysed and the laws defined. On the other hand, the just relations of the parts of the body with the

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whole and the whole with the parts, constitutes certain conditions of harmony, which in the majority of cases, have been formulated by the greatest artists as well as by scholars. In their principle they respond to an instinct which is in us, and, at the same time, they make a physical state conceivable, which once realised, will be most favourable to the expansion of our energy. *The idea of proportion is not a vain caprice; it corresponds to the conception of a normal existence.* In reality, every derogation from its principle constitutes, in different degrees, a deformity. The professors are prepared to set forth, regarding this subject, the most accredited theory, viz., that of Jean Cousin.

"The pupils who are taught in the State schools should be the object of special attention. The programme of admission to these schools has been made to coincide with the teaching of drawing as it exists in the lyceums and colleges. One has a right to expect good results from the candidates, for up to the present only drawing a head has been required of them. Perhaps greater demands will be made ere long. We must provide for the possibility of the drawing of the whole figure being one day included in the programmes."

Such are the general directions given to masters, viz., to teachers who are supposed to be *au courant* with the developments of their subjects.

13. *Co-ordination in Teaching: Drawing and other Subjects.*—In Chapter LIV of the Interim Report, the question of the co-ordination of the various forms and stages of education was dealt with. There is another co-ordination also necessary, viz., that which correlates the individual subjects of instruction. This was referred to in Chapter III of that report, see p. 11, Chapter XXIV, see p. 254, and at other places.

This principle governs modern ideas of education; multiplicity of associations between ideas, is the secret of increasing the command of knowledge, and of extending its variety. The matter is referred to at some length, in the Ministerial circular, in the following terms:—

"The general condition of the young people of the lyceums and colleges, the classic character of the education they receive therein, and the development that succeeds this education through raising the grammar classes to the rank of those of the humanities call for special considerations on the art of drawing in University establishments. Graphical drawing is naturally connected with scientific teaching. But it must react against that discredit, by which all seem impressed, who have ought to do with the fine-arts in secondary instruction,—the reproach, viz., as to leaving without preparation and without culture the whole of one side of the mind. Considerable importance has been attached to the arts in our age, and the slight attention therefore accorded to them in the schools seems a singular anomaly. *It would almost appear that one can be occupied with them and judge them without the least idea of the principle on which they are based and the laws which govern them. The public taste is thus exposed to every deceit and risks being guided only by chance.*

"Drawing may make good this defect. An improvement realised these ten years, was that from the grammar classes, the children may be initiated into the first elements of linear and geometrical drawing, as well as ornamental: this step simply placed them on the same footing in this respect as those pupils of the same age in the primary schools. The consequence is this, viz., that from the beginning drawing is a subject of study; and proceeding thence it is uniformly developed. Certainly we do not maintain that extreme importance should be laid on the drawing-course in the lyceums; but we undoubtedly maintain that it affords a valuable occasion for giving pupils their first artistic ideas. Thanks to it, one has some opportunity of unveiling to them the great epochs of art, in placing before them the classic masterpieces. To ornamental, landscape, and figure drawing, good elements of architecture could be united, which should be given concurrently with the scientific studies. All that, backed by excellent models, *will not be valueless to young men*, who, coming to maturity, may be called upon in the councils of their country, or in their own affairs, to give an account of a design and to judge the arts.

"In order to obtain this result, it is necessary that drawing should meet with effectual support from those branches of instruction for which it is an essential qualification, and that the written and represented monuments be as much as possible reconciled. In Paris, with the resources by which one is surrounded, with walks in the exhibitions and the museums, this '*rapprochement*' could take place, if the pupils were accompanied by a professor capable of giving them the appropriate lesson. But in the provinces, a selection of casts, photographs, and special books are absolutely necessary.

"An exact knowledge of mythology is indispensable for thoroughly comprehending and appreciating the classic writers, and particularly the poets. All the art of the ancients had its origin in poetry, it is its inseparable complement. We do not believe an elementary work on mythology exists, whose aim is to aid in the understanding of authors, and to trace art back to its motive and source. We have not a sufficiently high idea of the fables of Greece. These fictions, full of such true sentiment, often of such exquisite delicacy, and sometimes of such grand morality, are offered us stripped of their original and profound signification, summarily reduced to conceptions coarse enough, it may be, to pervert the truth, *and do not at all give the idea of the Greek anthropomorphism*, verily a true model of art. The works of M. Decharme and of M. Collignon are excellent, but are, for the purpose which we indicate, too much in the direction of archæology. There must be a literary mythology depending on art and seeking its representation. In the meantime, engravings and photographs executed according to the antiques will be necessary in order to adequately reveal the forms by which artists have clothed the types created by the imagination of poets. In order to support the action of the masters, there should be placed in the University libraries, by the side of works such as '*La Symbolique*,' by Creuzer and Gungnault, '*The Histoire des religions de l'antiquité* by M. Maury, books like the '*Galerie mythologique*,' by Millin, a work aleady old, but still useful; the '*Manuel d'archéologie*,' by M. Ottfried Muller, and the '*Dictionnaire des antiquités grecques et romaines*,' *by Rich*; these last bear equally upon religion and history.

"This last science embraces each day a more extended field. By facts, they shew the development of ideas; the painting of the morals involves respect for the fine-arts. History does more: it deems that the productions of art and industry are a source of information as venerable as the texts themselves, and it puts them under contribution. It is greatly to be desired that these precious testimonies of the physiognomy of time could be set before the pupils by means of exact reproductions. This idea which had been conceived by M. Drury, whose initiative in everything concerning teaching has been so successful,—this idea had been developed in a 'History of France,' the fruit of the collaboration of MM. Bordier and Charton. M. Duruy concluded by giving it its full signification in his fine Roman History and in his Grecian history, which remains also as a monument of science and of '*science figuré*'. But it would be necessary for the professors of lyceums and colleges to form portfolios according to nations and to epochs, bringing together illustrative pictures, numerous monuments, sculptures, paintings, medallions and characteristic coins, arms, costumes, utensils, etc. In the main, it is clearly then art from the point of view of its history to which the attention should be readily directed in order to make the lessons more complete. The idea of calling upon art to thus make contribution to its own history deserves to be largely extended.

"Therefore, would not a source of lively interest be created if, whilst the pupil translated the poets, collections of ancient monuments inspired directly by them, or simply relating to the subjects of which they have sung, were shewn to him? Let us cite among the collections of this kind, besides the germ of others in the '*Galerie mythologique*' of Millin, the '*Galerie homérique* of Inghirami,' the '*Galerie héroïque*' of Owerbeck,' the *Monuments inédiits d'antiquité figurée grecque, étrusque et romaine, cycle héroïque*, containing the *Achilléide*, the *Orestéide*, the *Odysséide* by Raoul Rochette, etc. The Iliad and Odyssey, very much antecedent to every work of art, properly so called, comprehend all the aspirations of the Greek, already so profoundly artistic, and all the ideas the language can express peculiar to an art which had been perfect. There are a few of the epithets of Homer which have neither a plastic meaning nor refer to a picturesque effect.

"The Greek vases, concerning which there exist so many publications, abound in subjects which, by their simple and imposing style and expression, seem an eloquent commentary on the most ancient cosmogonic and heroic traditions. Let us state also that everything concerning the costume remains incomprehensible without the monuments. From another point of view, what work was more capable of interesting the pupils, than the '*Iconographie grecque et romaine*' of Visconti, which explains, together with the poets, the historians, and orators? Would it be an intelligent scholar who would not be desirous of knowing the likeness of each of these great men, whose name is as the epitome, and work as the ideal of some element of genius? If the moral character be considered, the serene superiority of a Pericles, the tenderness of a Euripides, the penetration and irony of a Menander, the power of spirit of a Demosthenes, irradiate their faces by traits which once seen can never be forgotten. At the same time, what documents better qualified to throw light

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on the history of the Roman aristocracy than these heads of Patricians in which the Roman energy and sacerdotal gravity are so closely united with the austerity of the legislator and financier? Will not the most complete study of man, that which, while invoking his image brings about a revivification of his outward form, of the typical envelope in which his faculties were clothed, tend to enrich the whole domain of the humanities? We will go still further. A bas-relief of Attic style, as that of Bacchus with Icarius, or even that which represents Antiope, Zetus and Amphion, the statue of Aristides wrapped in a close mantle, in the austere attitude that the customs of the tribune imposed on the Athenian orators; some funeral pillar or one of the numerous vases decorated by the Bacchanalia, are most appropriate to make clear the literary genius of the Greek and the merry and placed character of Hellenic life. The natural manner of viewing a subject, the luminous simplicity of form, the skilful propriety of expression, all the qualities, which in the art of good utterance, constitute Atticism, have been possessed by the Greek artists in the same degree as by the Greek authors.

"It would appear to me that the professor of rhetoric would render a great service by pointing out these agreements, every time opportunity offered, and by proclaiming that works of talent, in whatever forms they may be clothed, are subject to the same general laws; that they are amenable to the same type of criticism; and that, in order to be a good judge of art, it is at least wise to be governed by analogy, which taken in its most universal acceptation, is one of the great auxiliaries of judgment. But it is especially in philosophy that it is possible to solidly establish the basis of a true criterion of art. Although the pupils of this class may be deterred from following it by the preparation for a very important examination, the professor may find time to insist on this observation, that, in the arts, the conceptions are not formed in an isolated manner, and that their dignity depends on the faculty from which they are derived; that passion and interest should not be the source of genuine inspiration, because, in art, as in morals, the aim should be disinterested. At the same time, it will always be very important, while thoroughly recognising that art has an original aim, to say what are the limits imposed on its independence. It is not within my province to speak of the part that æsthetics plays in order to prevent young minds from being the dupes of erroneous theories, and to guard them from defective forms. It is the concern of the professor, who, while he leads them to admire, will not be at a loss to classify the arts, to determine their domain, and to shew that they gain nothing by encroaching on one another.

"It will suffice if the attention of the very distinguished agrégés of the University be drawn to this aspect of the question in order that we may have reason to hope that art will soon have generations of those who seriously appreciate it.

"While receiving instruction of this kind, the pupils of the lyceums could, without regret, give to drawing the little time that is demanded for it. It is not by the empty talents of amateurs but by the level of ideas, that the superiority which is appropriate to the higher classes of society must be established. Public opinion would only be the gainer, if men of the world, illuminated by their studies and placed, moreover, beyond self-interest, were capable of directing it; as it is at present, they are observed to submit to the caprices of fashion or even to inspire them, and that with respect to the theory, as well as to the practice of art, they are often shewn to be altogether inferior to the skilful workmen in our industries.

"In the last analysis, would not the education of the people be more thorough if there were a closer bond of union between art and literature, in the University teaching, and if art were continually raised by the care that must be exercised in determining its various relations, not to the region of mere imagination, but to the most noble of our faculties? At the zenith of the advanced studies, our schools of Athens and Rome shew how fecund this union may be. We would wish that it were sanctioned from the grammar class; and that art, after having been held out as one of the most vivid expressions of political and religious sentiment, as one of the sources of history and the indispensable auxiliary of literary intelligence, were connected in relation to its critique, with the principles which govern all our productions, and, with respect to its origin, to the constitutive ideas of the human mind."

This will afford some faint idea of the outlook of the French mind upon the subject of education and educational reform.

14. *General Concluding Remarks.*—There are many other subjects treated of by circular direction. For example, in the circular of 9th March, 1899, directions are given as to the teaching of the *mother tongue;* in the circular of 10th August, 1898; the report of July, 1898, of the Higher Council, on the teaching of *geology* in the classes for secondary classic and secondary modern instruction are given; and so on. It is not proposed to extend this chapter. It is sufficient to observe that the review of all questions of teaching by the Higher Council, constituted as it is by selection from among the ablest educated men of France, leads to the furnishing of advice, of equally high character, and equally representative of the best thought and knowledge in the sphere of pædagogy, in every subject of instruction.

To appreciate what it all means, we must start with a just recognition of the fine state of teaching preceding the issue of the circulars. That level was yet not high enough, and thus France has made still more strenuous efforts to improve its educational organisations.

Properly trained teachers, appealed to by such documents, must, and as a matter of fact do, respond with better and more wisely directed teaching effort, and it is in this way that progress is made certain.

CHAPTER XIX.

CHAPTER XIX.

Organisation of Secondary Education in the German Empire—History and Curricula.

[G. H. KNIBBS.]

1. *Introduction.*—The federation of the German Empire in 1871 did not include the School System, so that in any discussion of the organisation of German Secondary Education, that fact must be continually borne in mind.

Prussia, Bavaria, Saxony, Württemberg, Baden, Hesse, Mecklenburg–Schwerin, and Mecklenburg–Strelitz, and Elsass–Lothringen have each their own systems.

As the result of a Conference held at Dresden in October, 1872, at which there were delegates from all the States of the Empire, an Empire School Commission (Reichs–Schulkommission) was established on the 19th February, 1875. This consisted of six members; four permanent, viz., one from each of the provinces, Prussia, Bavaria, Saxony, and Württemberg; one every two years alternately from Baden, Hesse, Elsass–Lothringen, and Mecklenburg–Schwerin, this being the fifth; and the sixth was similarly appointed every two years from the remaining States in regular succession. A consequence of the work of the commission was the recognition of the equality of the Maturity Certificates (Reifezeugnisse) of all German Gymnasia, and a little later (commencement of 1889) of those of the Realgymnasia. In fact, it may be said that it is largely owing to the work of the commission that a considerable measure of unification in the educational systems of the different parts of the Empire has been attained.

There is as yet, however, no absolute identity between the programmes in the different States, as the following compilation will shew. It is based upon the published report of the Gymnasia up to about 1896–7 :—

Time devoted to various subjects in different parts of Germany.

Province.	Total hours. 9 classes. Obligatory subjects.	Hours in Subjects.			
		Latin, 9 classes.	Greek, 6 classes.	French, classes as shewn.	Arith., Math. Phys., Nat., Hist.
Prussia	252	65	36	19 (7) classes	52
Bavaria	228	66	36	10 (4) „	38
Saxony	258	72	40	18 (7) „	49
Württemberg	263	81	40	18 (7) „	47

Similar differences exist also in the Realgymnasia, as a reference to the following list for the obligatory subjects and Latin will shew :—

Province.	Total hours. Obligatory Subjects.	Hours. Latin.
Prussia	259	46
Bavaria	247	60
Saxony	279	54
Württemberg	281	74

For this reason a thorough study demands that programmes be given for the "Gymnasien," and "Realschulen" of all the different provinces, etc., in the German confederation.

While it is not proposed to discuss the statistical aspect of education in Germany, the following items of information are quoted, and are not without significance. Though not from very recent statistics, they nevertheless serve to give an idea of the provision made by Germany for education. According to the Reports for 1898, the total number of "Gymnasien, Realgymnasien, and Oberrealschulen" in the German Empire was 612, beside which there were 178 preparatory gymnasial schools, and also 217 Realschools. The

The following statistical results are based upon information collected and published by Herr Direktor C. Rethwisch, of Charlottenburg, near Berlin. In the different provinces hereunder mentioned there is one higher scholar of each denomination for the following numbers of inhabitants in each class. That is to say, there is in Prussia 1 Protestant higher scholar for every 198 Protestant inhabitants; 1 Catholic higher scholar for every 366 Catholic inhabitants; and 1 Jewish higher scholar for every 30 Jewish inhabitants.

Prussia	...	...	198	Protestants,	366	Catholics,	30	Jews.
Bavaria	...	...	150	„	236	„	27	„
Saxony	...	...	253	„	435	„	28	„
Wurttemberg		...	108	„	187	„	17	„
Baden	...	...	116	„	240	„	24	„
Hesse	...	...	251	„	202	„	30	„
Elsass-Lothringen		....	103	„	355	„	49	„

The significance and meaning of this table is obvious, and comment is unnecessary.

2. *Development of the Secondary System of Prussia.*—Some account of "The Curricula and Programmes of Work for the Higher Schools in Prussia" is given in the "Special Reports" of the English Education Department.[1] The information herein has been derived direct from German sources. Mr. Lipscomb's work is simply translation of curricula.[2]

Almost immediately after his coming to the throne in 1713, Frederick William I of Prussia issued certain regulations governing schools and Gymnasia and their inspection, etc. (Die evangelisch-reformierte Inspektions–, Presbyterial–, Klassikal–[3], Gymnasien– und Schulordnungen). After the "Seven Years' War" Frederick II (the Great) also gave some attention to the matter of education in schools—in fact, this constituted the hobby-horse of his old age ("Steckenpferd seines Alters.") The Minister for State and Justice, Freiherr von Zedlitz Leipa, was put in charge of the school department and called the Philanthropinist Trapp from Dessau to Halle as Professor of Pædagogy, and also the Philologist Friedrich August Wolf. The educational activity of these two men made a new epoch in higher education not only for Prussia, but also for the whole of Germany.

The next conspicuous moment in the history of German education was about 1807. The dictum of Frederick William III is *a remarkable appreciation of what part education can play in the affairs of a nation.* Crushed as Prussia was after the battle of Jena, the King's verdict was that "Der Staat muss durch geistige Kräfte ersetzen, was er an physischen verloren hat." (The State must retrieve by intellectual power what it has lost through physical.) This decision of his introduced new vigour into education. Wilhelm von Humboldt and Wolf built up the secondary and higher education of the country. In 1817, "Kultus und Unterricht" (Public Worship and Education) acquired its own proper Ministerium, which remained under the charge of Freiherr von Altenstein till 1840. It was during his ministry that the first Normal programme (Normallehrplan) was developed (1837). Passing over the history of educational activity till the period following the Franco-German War,[4] we may notice that Dr. Falk entered into office about 1872, and under him Hermann Bonitz had charge of higher education in 1875.

The reform of the gymnasia was again earnestly considered, Bonitz having a very high reputation. The part he played is, however, of special significance in connection with the recent modifications of the demands of the advocates of classical education. It will suffice to say that a considerable number of Gymnasia and Realschools were now established. Following on Falk, von Puttkamer held office for a short time, and then Dr. von Gossler (1881–1891). Under his régime considerable attention was paid to physical exercises and gymnastics, the tasks of the pupils were moderated, and the programmes were revised. The present Emperor William II, who was a pupil in the Gymnasium in Kassel,[5] had no sooner ascended the throne than he devoted himself earnestly to educational matters. At his command a Conference to inquire into questions of higher education was held in Berlin, from the 4th to the 17th of December, 1890. This Conference consisted in part of practical teachers and in part of interested laity in various walks of life, and was presided over by the Kaiser himself. He opened it with a significant speech, which shewed that in his view it was desirable that the centre of gravity of German education should be so moved as to more closely accord with the demands of the modern world, and that it should conform to the necessities which recent history, both in Germany and elsewhere, pointed out as desirable. The Kaiser believed also that the educational system should be reformed so as to simplify the instruction, and further so that it should reinforce the power and aptitude of the German youth for military service.

The

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[1] See Vol. 3, pp. 253–321. The article is by Mr. W. G. Lipscomb, Asst. Master in University College, London, and Hon. Sec. Modern Language Association.

[2] The critical reader will find discrepancies. The curricula and programmes translated by Mr. Lipscomb bear the date Berlin, 1896. Mr. Lipscomb gives (p. 256) in the Gymnasium programme:

Latin	...	...	8	8	7	7	7	7	6	6	6	instead of
„	...	...	8	8	7	7	7	7	7	7	7	

as given by the Commissioner in section 3 hereinafter. The Friedrich-Werdersches Gymnasium programme, Berlin, for 1901–2, very kindly supplied by the Direktor, Dr. R. Lange, gives—

Latin	...	...	8	8	8	8	8	7	7	7	7

So also does the Jahresbericht of the Wilhelms Gymnasium for 1901–2. Apparently Mr. Lipscomb was unaware of the "Ministerialverfügung vom 13 Oktober, 1895," which made the above 6, 6, 6, into 7, 7, 7. Care has been taken to give the information as accurately as possible, and it was obtained in the most direct manner possible.

This one illustration may be taken as typical of the explanation of any differences which the critical reader may observe.

[3] "Klassikal" here means parochial.

[4] Some reference to this period will be made hereinafter.

[5] It has been stated that the father of the present Emperor was induced to give his son this type of education by Prince Bismarck. Dr. Hinzpeter was director.

The consequence of this meeting was the constitution of a special Commission of seven members, at the head of which was placed the former master of the Kaiser, Geh. Rat. Dr. Hinzpeter. This Commission worked out for the Gymnasia and Realschools the new programmes, which came into force in 1892. Latin had a much less significant place than in the former programmes. To strengthen the educational spirit, the decree of the 28th July, 1902, improved also the rank of the teachers of secondary education. All higher scientific teachers were called "Oberlehrer," and the higher third of these received the title "Professor."[1]

The general question as to the place of Latin has been discussed in an earlier chapter (III). In the spring of 1900 a new School-Conference was mooted. This was to consist of two parties—one, the friends of the old Gymnasium system; the other, those who believed that to strenuously maintain the classical form of education was not consistent with the educational requirements of the modern world. It was recognised that this Conference would be, in some measure, a public test of the power of the two parties (eine öffentliche Kraftprobe). The Conference met in June, 1900. Beside the Kultus Minister, Dr. Studt, and the Government representatives, there were thirty-four other members, of which only five were actual educational officials; a few others having held educational offices previously. In view of the conclusions of this Conference, a decree was issued on the 26th November, 1900, the fundamental purpose of which was to promote the important reforms deemed necessary. In Easter, 1901, the new programmes came into force, viz., for the "Gymnasium," the "Realgymnasium," and the "Oberrealschule," and they were so designed that the courses could be officially recognised as of equal academic value.[2] For the whole nine classes of these schools, the total number of hours in the Gymnasium was raised from 252 to 259, in the Realgymnasium from 259 to 262, in the Oberrealschule from 258 to 262.

Latin was increased from 62 to 68 hours in the Gymnasium. French was slightly increased, and it was arranged that English could be substituted for it as an obligatory subject.

General directions were put forward by the Ministerial Order of 25th October, 1901, and the new Order of Maturity Examination (Reife Prüfung) was put in force in the Easter term of 1903. This is the first time that the Examination regulations for all three complete types of school have been combined.

This recent movement, which has resulted in non-Latin courses being academically placed in a more favourable light, is known as the Reform movement, and is of sufficient importance to be separately discussed; see a Chapter on the subject, hereinafter.

It may be stated that there is an overwhelming consensus of opinion in Germany that the movement makes for substantial improvement in the education of the German people. The "gymnasium monopoly"—that is, the conferring of unique privileges upon the students of the gymnasia—has been replaced by a régime which puts them on exactly the same footing as students who pass through the two other classes of high school. This is popularly recognised as a step in the right direction.

We proceed to indicate the nature of the several curricula.

3. *The Three Curricula.*—The programmes for the "Gymnasien," "Realgymnasien," and "Oberrealschulen," in Prussia are as hereunder. The brackets denote that it is permissible to distribute the total time differently from what is shewn in the programmes, in the bracketed subjects, when deemed desirable.

General Curriculum for the Gymnasia.

Subjects.	Classes—Hours per Week.									
	VI.	V.	IV.	UIII.[3]	OIII.[4]	UII.[5]	OII.[6]	UI.[7]	OI.[8]	Totals.
Religion	3	2	2	2	2	2	2	2	2	19
German	3 } 4	2 } 3	3	2	2	3	3	3	3	26
And Historical narratives ...	1 }	1 }								
Latin	8	8	8	8	8	7	7 }	7 }	7 }	68
Greek	...	...	...	6	6	6	6 }	6 }	6 }	36
French	...	...	4	2	2	3	3	3	3	20
History	...	...	2	2	2	2 }	3 }	3 }	3	17
Geography	2	2	2	1	1	1 }	... }	... }	...	9
Arithmetic and Mathematics ...	4	4	4	3	3	4 }	4 }	4 }	4 }	34
Natural Science	2	2	2	2	2	2 }	2 }	2 }	2 }	18
Writing	2	2	...	...	...	...	...	...	...	4
Drawing	...	2	2	2	2	...	...	...	...	8
Total hours per week ...	25	25	29	30	30	30	30	30	30	259

The age of entry may be taken as 9 or 10, and each class is 1 year.

In addition to the above subjects there are three hours obligatory gymnastics for all classes; and two hours weekly for the pupils of Classes V and VI in singing.[9] Pupils from Class IV onward take part in Choir-singing. Drawing is optional from the Untertertia onward, and two hours a week are devoted to

[1] The German "Professor" and French "Professeur" are not unfrequently wrongly translated "master" or "teacher"; this latter translation is sometimes but not always correct.

[2] Die Gleichwertigkeit der drei Formen der höheren Schule (the equality of the three forms of higher school) is an extremely important educational principle. The free options in some Universities (particularly in the American) are really expressions of the same principle.

[3-8] U denotes "Unter" (*i.e.*, lower), and O "Ober" (*i.e.*, upper), the classes being called Untertertia, Obertertia, Untersecunda, Obersecunda, Unterprima, Oberprima.

[9] In individual cases pupils may be excused on medical certificates, as a rule, for half-year.

to it. From the Obertertia onward two hours English and two hours Hebrew are optional. Pupils of Classes IV and III who write badly are compelled to take writing-lessons. In the classes from the Obersecunda upward, English may replace French, three hours per week being devoted thereto, in which case French becomes an optional subject with 2 hours a week.

A deviation from the programme is permitted in the case of Classes OII, UI, and OI, as follows:— In place of the compulsory instruction in French, 3 hours in English may be substituted, French being taken if desired as a 2 hours optional subject. In other words English takes the place of French as the (*then*) obligatory subject, and if in addition it be desired to take French, as much as 2 hours may be devoted thereto.

There are some other slight changes as regards Greek, French, Mathematics, and Natural Science, which need not be referred to.

The following is the general programme for the Realgymnasium :—

General Curriculum for the Realgymnasia.

Subjects.	Classes—Hours per Week.									
	VI.	V.	IV.	UIII.	OIII.	UII.	OII.	UI.	OI.	Totals.
Religion	3	2	2	2	2	2	2	2	2	19
German	3 } 4	2 } 3	3	3	3	3	3	3	3	28
And Historical narrative ...	1 }	1 }								
Latin	8	8	7	5	5	4	4	4	4	49
French	...	...	5	4	4	4	4 }	4 }	4 }	29
English	...	...	...	3	3	3	3 }	3 }	3 }	18
History	...	...	2	2	2	2 }	3 }	3 }	3	17
Geography	2	2	2	2	2	1 }	}	}		11
Arithmetic and Mathematics...	4	4	4	5	5	5	5	5	5	42
Natural Science	2	2	2	2	2	4	5	5	5	29
Writing	2	2	...	...	...	...	...	...	...	4
Drawing	...	2	2	2	2	2	2	2	2	16
Total hours per week ...	25	25	29	30	30	30	31	31	31	262

From the Obertertia onward two hours linear drawing are optional. The remarks made in the previous case as to gymnastics, singing, writing apply here also. The significance of the bracketing is of course as previously explained.

The general programme for the Oberrealschule is as hereunder :—

General Curriculum for the Higher Real School.

Subjects.	Classes—Hours per Week.									
	VI.	V.	IV.	UIII.	OIII.	UII.	OII.	UI.	OI.	Totals.
Religion	3	2	2	2	2	2	2	2	2	19
German	4 } 5	3 } 4	4	3	3	3	4	4	4	34
And Historical Narrative ...	1 }	1 }								
French	6	6	6	6	6	5 }	4 }	4 }	4 }	47
English	...	...	...	5	4	4 }	4 }	4 }	4 }	25
History	...	...	3	2	2	2	3	3	3	18
Geography	2	2	2	2	2	1	1	1	1	14
Arithmetic and Mathematics...	5	5	6	6	5	5	5	5	5	47
Natural Science	2	2	2	2	4	6	6	6	6	36
Writing	2	2	2	...	...	...	...	...	...	6
Freehand Drawing	...	2	2	2	2	2	2	2	2	16
Total hours per week ...	25	25	29	30	30	30	31	31	31	262

The remarks previously made in regard to gymnastics, singing, and writing also apply to the above programme.

The

Those who elect to take an optional subject must devote themselves to it for a half-year at least.

The Real schools and Higher Burgher Schools[1] being only "six-class" schools, are of course not directly comparable with the preceding and are not of the same grade. Their programme is either that just given, up to the Untersecunda inclusive, or is as hereunder :—

Second Form in the Curricula for Realschools.

Subjects.	Classes—Hours per week.						
	VI.	V.	IV.	III.	II.	I.	Totals.
Religion	3	2	2	2	2	2	13
German	5 } 6	4 } 5	5	5	4	4	29
And Historical Narrative... ...	1 }	1 }					
French	6	6	6	5	4	4	31
English	.....	.....	.....	5	4	4	13
History	.....	.....	3	2	2	2	9
Geography	2	2	2	2	2	2	12
Arithmetic and Mathematics ...	4	4	5	5	5	5	28
Natural Science	2	2	2	2	5	5	18
Writing	2	2	2	.....	.....	.....	6
Freehand drawing	.....	2	2	2	2	2	10
Total hours per week ...	25	25	29	30	30	30	169

From Class III onward, two hours linear drawing is optional. In regard to singing, gymnastics, and writing, the remarks previously made apply here also.

4. *Analysis of Curricula.*—A comparison of the three curricula will bring into relief the essentials of similarity and difference, and enable the last educational decision of the German people to be more clearly understood. It may be remarked that the value of the German view depends mainly upon two things :—(1.) The excellent character of German education. (2.) The thoroughness of the discussion of the subject. In the analysis, the school period may be divided into three, viz. :—

Classes VI—IV say from 9 or 10 to 12 (L).
„ UIII–UII „ „ 13 to 15 (I).
„ OII—OI „ „ 16 to 18 (U),

These can be defined as the lower, intermediate, and upper divisions, denoted by the letters L, I, U. The subjects will be rearranged to include first all that are common. The letters G, RG, OR, R, denote respectively gymnasium, and the remaining classes of schools.

Subjects common to the four Programmes.

Subjects.	Lower Division.				Intermediate.				Upper Division.			Total.			
	G.	RG.	OR.	R.	G.	RG.	OR.	R.	G.	RG.	OR.	G.	RG.	OR.	R.
Religion	7	7	7	7	6	6	6	6	6	6	6	19	19	19	13
German, etc....	10	10	13	16	7	9	9	13	9	9	12	26	28	34	29
French	4	5	18	18	7	12	17	13	9	12	12	20	29	47	31
History	2	2	3	3	6	6	6	6	9	9	9	17	17	18	9
Geography	6	6	6	6	3	5	5	6	0	0	3	9	11	14	12
Mathematics with Arithm....	12	12	16	13	10	15	16	15	12	15	15	34	42	47	28
Nat. Science...	6	6	6	6	6	8	12	12	6	15	18	18	29	36	18
Writing	4	4	6	6	0	0	0	0	0	0	0	4	4	6	6
Drawing	4	4	4	4	4	6	6	6	0	6	6	8	16	16	10
Totals	55	56	79	79	49	67	77	77	51	72	81	155	195	237	156

Subjects not common to the four Programmes.

English	0	0	0	0	0	9	13	13	0	9	12	0	18	25	13
Latin...	24	23	0	0	23	14	0	0	21	12	0	68	49	0	0
Greek	0	0	0	0	18	0	0	0	18	0	0	36	0	0	0
Totals	24	23	0	0	41	23	13	13	39	21	12	104	67	25	13
Grand Totals	79	79	79	79	90	90	90	90	90	93	93	259	262	262	169

We see from this analysis that *Religion* is identical throughout; it occupies about $\frac{1}{13}$ of the whole time. The *Mother-tongue* is practically the same in the two Gymnasia, and the Realschool gives relatively a little more time thereto than either. Absolutely the subject is strongest in the Higher Realschool, but for

[1] Realschulen und höheren Bürgerschulen.

for similar periods it is much stronger in the Realschool. *French* is weak in the Gymnasium, and somewhat weak in the Realgymnasium; but it is a strong subject in the Higher Realschool and even in the Realschool. Mathematics and Arithmetic are weak subjects in the Gymnasium, and are strongest in the Oberrealschule; the same remark applies to Natural Science. Finally the language elements may be thus compared:—

Gymnasium.		Realgymnasium.		Higher Realschool.	
Latin	68	Latin ...	49		
Greek	36	English ...	18	English ...	25
French	20	French ...	29	French ...	47
	124		96		82
German ...	26	German ...	28	German ...	34
Total ...	150		124		116

With these the Science elements may be compared:—

Mathematics...	34	Mathematics ...	42	Mathematics ...	47
Natural Science	18	Natural Science	29	Natural Science	36
	52		71		83

It is now obvious that the gymnasial course is *linguistic*, and the Oberrealschool course *scientific*.

5. *The Reform Gymnasium and Reform Realgymnasium.*—Two new types of institution which have recently appeared in Germany are what are known as the Reform Gymnasium and Reform Realgymnasium. Their constitution accords with what the German Emperor believes to be a necessary change in the tendency of education, so that it shall be a more fitting equipment for life.

The decree relating to this is a document of considerable interest for educationists, and is, therefore, given in full; so also (in a note) is the original text. While reading this document, it is well to remember that the Kaiser not only knew of what he was talking from personal experience, he had also taken a direct personal and intense interest in German *education, as a means of strengthening the hands of the nation in its relations with the rest of the civilised world.* The document is in no sense a mere voicing of the opinions of the Ministerium (für Kultus und Unterricht).

The following is the decree:—

Imperial Decree of 26th November, 1900.—Concerning the Report of 20th November of this year, I declare in accord therewith that the reform initiated by me in the year 1892 shall be extended in respect of the following:—

[The rendering given hereunder from the Special Reports of the Board of Education, London, vol. 9. pp. 173-174, while somewhat free, is substantially correct].

(1.) With reference to the question of privileges, the principle must be that the *Gymnasium, Realgymnasium*, and *Oberrealschule* are to be considered as of equal value from the point of view of general intellectual culture, which it is only necessary to supplement, in so far as for many lines of study and professional pursuits particular branches of knowledge are required, which do not enter into the curriculum of each institution, or do not enter to the requisite degree. Consequently, steps are to be taken to extend the privileges of institutions with a non-classical curriculum. *This is the best means of raising the repute and increasing the attendance at these institutions, and of affecting the wider spread of modern and practical subjects.*[1]

(2.) In thus acknowledging the equality of the three types of higher institutions, it will be possible more thoroughly to strengthen the special characteristics of each type. In this connection I shall offer no objection to an increase in the number of hours devoted to Latin in the Gymnasium and Realgymnasium. But I am particularly anxious that, in view of the special importance that now attaches to a knowledge of English, this language should receive more attention at the Gymnasium. Therefore, side by side with Greek, English is everywhere to be an alternative subject, while the latter language is to be retained as an optional one. Also, it appears to be advisable that in the curriculum of the Oberrealschule (which admits of an extension) geography should receive a larger measure of attention.

(3.) Since 1892 undeniable progress has been made in the economy of instruction in many branches. More must still be achieved. Mindful of the old adage, "*Multum, non multa*," the directors will be constrained to pay increased attention to see that equally high attainments are not demanded in all branches, but the most important among them, according to the nature of the institution, are emphasised and extended. In the teaching of Greek it is specially important to do away with all unnecessary details of grammar, and chiefly to keep in mind that, side by side with the æsthetic point of view, a consideration of the relations between the ancient world and modern culture should receive its proper meed of attention. *In modern languages, special efforts must be made to secure skill in speaking the foreign idiom,*[1] and a ready comprehension of the most popular authors. In history two deficiencies make themselves felt—the neglect of important portions of ancient history, and the too scant consideration of German history of the nineteenth century, with all its wealth of stirring recollections, and great achievements for our native country. In *geography*, both in the Gymnasium and in the Realgymnasium, it is to be desired that the *instruction be placed in the hands of teachers who have made a special study of this branch.*[1] In the teaching of natural science *a larger measure of time must be devoted to observation and experimental work,*[1] and frequent excursions must enliven the instruction; in teaching chemistry and physics the applied and technical side of the subject must not be neglected. In *drawing* (where, moreover, the capacity to reproduce the results of observations in rapid sketches is to be encouraged),

[1] The italics are not in the original.

encouraged), efforts are to be made at the Gymnasium to *induce those pupils who intend later on to take up the study of technology, natural science, mathematics, or medicine to take proper advantage of the optional instruction in drawing.*[1] Besides the physical exercises, which are to be more extensively introduced, greater attention is to be paid in drawing up the time-table to matters of *hygiene*,[1] more especially by means of a suitable arrangement of the different lessons, and by *considerably increasing the duration of the intervals which up till now have been too short*[1].

(4.) As the Abschlussprüfung has not fulfilled the expectations that were formed of it, and, in particular, instead of diminishing the rush of students to the University, has rather augmented it, it is to be abolished as soon as possible.

(5.) The establishment of schools following the Altona and Frankfort curricula has, on the whole, proved beneficial to the places where they exist. Through the fact that the earlier stages of their curriculum are the same as those of the non-classical schools, they constitute no inconsiderable social gain. It is my wish not only that the experiment should be continued in a manner appropriate to the end in view, but that, where the given conditions prevail, attempts should be made on a more extended basis.

I cherish the hope that the measures thus to be introduced, for the realisation of which I count upon the ever-constant sense of duty and intelligent devotion of the teachers, will conduce to the advantage of our higher schools, and contribute their share towards lessening the antagonism between the representatives of the classical and modern ideas of education, and succeed in bringing about a conciliatory adjustment of their differences.

Given at Kiel, November 26, 1900, on board H.M.S. Kaiser Wilhelm II.[2] (Signed) WILHELM R.

6. *The Reform Curricula and their Comparison with the Ordinary Curricula.*—The following are the Prussian Reform curricula, which, constituting as they do an important experiment in German secondary education, are worthy of close attention. In order to facilitate a comparison with the ordinary curricula, the hours per week of the latter are shewn by the small figures underwritten :—

Reform Gymnasia, Frankfort-on-the-Main.

Subjects.	Classes—Hours per Week.									
	VI.	V.	IV.	UIII.	OIII.	UII.	OII.	UI.	OI.	Totals.
Religion	3 3	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	19 (19)
German	4 3	3 2	4 3	3 2	3 2	3 3	3 3	3 3	3 3	31 (26)
And Historical narrative ...	1 1	1 1								
Latin	... 8	... 8	... 8	10 8	10 8	8 7	8 7	8 7	7 7	51 (68)
Greek	... ..	... ..	... ..	... 6	... 6	8 6	8 6	8 6	8 6	32 (36)
French	6 ..	6 ..	6 4	3 2	2 2	2 3	2 3	2 3	2 3	31 (20)
History	... ..	... ..	3 2	2 2	2 2	2 2	2 3	2 3	3 3	16 (17)
Geography	2 2	2 2	3 2	1 1	2 1	... 1	... ..	... ..	... ..	10 (9)
Arithmetic and Mathematics	5	5 4	5 4	4 3	4 3	3 4	3 4	3 4	3 4	35 (34)
Natural Science	2 2	2 2	3 2	2 2	2 2	2 2	2 2	2 2	2 2	19 (18)
Writing	2 2	2 2	... ..	... ..	... ..	... ..	... ..	... ..	... ..	4 (4)
Drawing	... ..	2 2	2 2	2 2	2 2	... ..	... ..	... ..	... ..	8 (8)
Total hours per week...	25 25	25 25	28 29	29 30	29 30	30 30	30 30	30 30	30 30	256 (259)

The next two examples are programmes of Reform Realgymnasia. They are not identical.

Reform

[1] The italics are not in the original.

[2] The following is the text :—

Allerhöchster Erlass vom 26 November, 1900.

Auf den Bericht vom 20. November dieses Jahres erkläre Ich Mich damit einverstonden, dass die von Mir im Jahre, 1892, eingeleitete Reform der höheren Schulen nach folgenden Gesichtspunkten weitergeführt wird :—

1. Bezüglich der Berechtigungen ist davon auszugehen, dass das Gymnasium, das Realgymnasium und die Oberrealschule in der Erziehung zur allgemeinen Geistesbildung als gleichwerthig anzusehen sind und nur insofern eine Ergänzung erforderlich bleibt, als es für manche Studien und Berufszweige noch besonderer Vorkenntnisse bedarf, deren Vermittelung nicht oder doch nicht in demselben Umfange zu den Aufgaben jeder Anstalt gehört. Dementsprechend ist auf die Ausdehnung der Berechtigungen der realistischen Anstalten Bedacht zu nehmen. Damit ist zugleich der beste Weg gewiesen, das Ansehen und den Besuch dieser Anstalten zu fördern und so auf die grössere Verallgemeinerung des realistichen Wissens hinzuwirken. 2.

Reform Realgymnasium, Frankfort-on-the-Main.

Subjects.	Classes—Hours per Week.									
	VI.	V.	IV.	UIII.	OIII.	UII.	OII.	UI.	OI.	Totals. R.G.
Religion	3 3	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	19 (19)
German	4 3	3 2								
And Historical narratives...	1 1 (5 / 4)	1 1 (4 / 3)	4 3	3 3	3 3	3 3	3 3	3 3	3 3	31 (28)
Latin	... 8	... 8	... 7	8 5	8 5	6 4	6 4	6 4	6 I	40 (49)
French	6 ..	6 ..	6 5	4 4	4 4	3 4	3 4	3 4	3 4	38 (29)
English	... ..	... ..	... ..	... 3	... 3	6 3	4 3	4 3	4 3	18 (18)
History	... ..	... ..	3 2	2 2	2 2	2 2	3 3	3 3	3 I	18 (17)
Geography	2 2	2 2	3 2	1 2	1 2	1 1	... ..	... ..	... ..	10 (11)
Arithmetic and Mathematics	5 4	5 4	5 4	4 5	4 5	4 5	5 5	5 5	5 5	42 (42)
Natural Science	2 2	2 2	3 2	3 2	3 2	2 4	4 5	4 5	4 5	27 (29)
Writing	2 2	2 2	... ..	... ..	... ..	... ..	... ..	... ..	... ..	4 (4)
Drawing	... ..	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	16 (16)
Total hours per week...	25 25	25 25	28 29	29 30	29 30	31 30	32 31	32 31	32 31	263 (262)

With the above, the Altona programme may be compared. It

2. Durch die grundsätzliche Anerkennung der Gleichwerthigkeit der drei höheren Lehranstalten wird die Möglichkeit geboten, die Eigenart einer jeden kräftiger zu betonen. Mit Rücksicht hierauf will Ich nichts dagegen erinnern, dass im Lehrplan der Gymnasien und Realgymnasien das Lateinische ein entsprechende Verstärkung erfährt. Besonderen Werth aber lege Ich darauf, dass bei der grossen Bedeutung, welche die Kenntniss des Englischen gewonnen hat, diese Sprache auf den Gymnasien eingehender berücksichtigt wird. Deshalb ist überall neben dem Griechischen englischer Ersatzunterricht bis Untersekunda zu gestatten und ausserdem in den drei oberen Klassen der Gymnasien, wo die örtlichen Verhältnisse dafür sprechen, das Englische an Stelle des Französischen unter Beibehaltung des letzteren als fakultativen Unterrichtsgegenstandes obligatorisch zu machen. Auch erscheint es Mir angezeigt, dass im Lehrplan der Oberrealschulen, welcher nach der Stundenzahl noch Raum dazu bietet, die Erdkunde eine ausgiebigere Fürsorge findet.
3. In dem Unterrichtbetriebe sind seit 1892 auf verschiedenen Gebieten unverkennbare Fortschritte gemacht. Es muss aber noch mehr geschehen. Namentlich werden die Direktoren eingedenk der Mahnung: "Multum, non multa" in verstärktem Maasse darauf zu achten haben, dass nicht für alle Unterrichtsfächer gleich hohe Arbeitsforderungen gestellt, sondern die wichtigsten unter ihnen nach der Eigenart der verschiedenen Anstalten in den Vordergrund gerückt und vertieft werden.

Für den griechischen Unterricht ist entscheidendes Gewicht auf die Beseitigung unnützer Formalien zu legen und vornehmlich im Auge zu behalten, dass neben der ästhetischen Auffassung auch die den Zusammenhang zwischen der antiken Welt und der modernen Kultur aufweisende Betrachtung zu ihrem Rechte kommt.

Bei den neureren Sprachen ist mit besonderem Nachdruck Gewandtheit im Sprechen und sicheres Verständniss der gangbaren Schriftsteller anzustreben.

Im Geschichtsunterricht machen sich noch immer zwei Lücken fühlbar: die Vernachlässigung wichtiger Abschnitte der alten Geschichte und die zu wenig eingehende Behandlung der deutschen Geschichte des 19 ten. Jahrhunderts mit ihren erhebenden Erinnerungen und grossen Errungenschaften für das Vaterland.

Für die Erdkunde bleibt sowohl auf den Gymnasien wie auf den Realgymnasien zu wünschen, dass der Unterricht in die Hand von Fachlehrern gelegt wird.

Im naturwissenschaftlichen Unterricht haben die Anschauung und das Experiment einen grösseren Raum einzunehmen und häufigere Exkursionen den Unterricht zu beleben; bei Physik und Chemie ist die angewandte und technische Seite nicht zu vernachlässigen.

Für den Zeichenunterricht, bei dem übrigens auch die Befähigung, das Angeschaute in rascher Skizze darzustellen, Berücksichtigung verdient, ist bei den Gymnasien dahin zu wirken, dass namentlich diejenigen Schüler, welche sich der Technik, den Naturwissenschaften, der Mathematik oder der Medizin zu widmen gedenken, vom fakultativen Zeichenunterricht fleissig Gebrauch machen.

Ausser den körperlichen Uebungen, die in ausgiebigerer Weise zu betreiben sind, hat auch die Anordnung des Stundenplans mehr der Gesundheit Rechnung zu tragen, insbesondere durch angemessene Lage und wesentliche Verstärkung der bisher zu kurz bemessenen Pausen.

Da die Abschlussprüfung den bei ihrer Einführung gehegten Erwartungen nicht entsprochen und namentlich dem übermässigen Andrange zum Universitätsstudium eher Vorschub geleistet, als Einhalt gethan hat, so ist dieselbe baldigst zu beseitigen.

Die Einrichtung von Schulen nach den Altonaer und Frankfurter Lehrplänen hat sich für die Orte, wo sie besteht, nach den bisherigen Erfahrungen im Ganzen bewährt. Durch den die Realschulen mitumfassenden gemeinsamen Unterbau bietet sie zugleich einen nicht zu unterschätzenden sozialen Vortheil. Ich wünsche daher, dass der Versuch nicht nur in zweckentsprechender Weise fortgeführt, sondern auch, wo die Voraussetzungen zutreffen, auf breiterer Grundlage erprobt wird.

Ich gebe Mich der Hoffnung hin, dass die hiernach zu treffenden Maassnahmen, für deren Durchführung Ich auf die allzeit bewährte Pflichttreue und verständnissvolle Hingebung der Lehrerschaft rechne, unseren höheren Schulen zum Segen gereichen und an ihrem Theile dazu beitragen werden, die Gegensätze zwischen den Vertretern der humanistischen und realistischen Richtung zu mildern und einem versöhnenden Ausgleiche entgegen zu führen.

Gegeben Kiel, den 26th November, 1900.

An bord M.S. "Kaiser Wilhelm II."

WILHELM R.

An den Minister der geistlichen, etc., Angelegenheiten. Studt.

It is as follows :—

Reform Realgymnasia, Altona.

Subjects.	Classes—Hours per Week.									
	VI.	V.	IV.	UIII.	OIII.	UII.	OII.	UI.	OI.	Totals.
Religion	3	2	2	2	2	2	2	2	2	19
	3	2	2	2	2	2	2	2	2	(19)
German	4	3								
	3	2								
And Historical narrative ...	1 5	1 4	4	2	2	3	3	3	3	29
	1 4	1 3	3	3	3	3	3	3	3	(28)
Latin	...	...	...	6	6	6	6	6	6	36
	8	8	7	5	5	4	4	4	4	(49)
French	6	6	5	4	4	3	3	3	3	37
	..	..	5	4	4	4	4	4	4	(29)
English	...	...	4	3	3	3	3	3	3	22
	..	..	..	3	3	3	3	3	3	(18)
History	...	...	2	2	2	2	3	3	3	17
	..	..	2	2	2	2	3	3	3	(17)
Geography	2	2	2	2	1	1	...	...	...	10
	2	2	2	2	2	1	..	..	..	(11)
Arithmetic and Mathematics	5	5	6	5	4	5	4	5	5	44
	4	4	4	5	5	5	5	5	5	(42)
Natural Science	2	2	2	2	4	4	5	4	4	29
	2	2	2	2	2	4	5	5	5	(29)
Writing	2	2	...	...	...	...	...	...	...	4
	2	2	..	..	..	..	..	..	..	(4)
Drawing	...	2	2	2	2	2	2	2	2	16
	..	2	2	2	2	2	2	2	2	(16)
Total hours per week...	25	25	29	30	30	31	31	31	31	263
	25	25	29	30	30	30	31	31	31	(262)

The comparison of the totals is as follows :—

	Rel.	Ger.	Lat.	Fr.	Eng.	His.	Geog.	Ar.	Sci.	Wr.	Dr.
Frankfort...	19	31	40	38	18	18	10	42	27	4	16
Altona ...	19	29	36	37	22	17	10	44	29	4	16

Clearly there is no very decided difference in the two Realgymnasium programmes.

7. *Comparison of Reform and Ordinary Curriculum for the Gymnasium.*—The following points may be noted. "Religion" is unaltered. German gains about $\frac{1}{6}$, viz., 5 hours on 26. No Latin is done in Classes VI-IV, as in the ordinary curriculum. Greek does not commence till the Untersecunda, while formerly it commenced in the Untertertia. French commences in Class VI, but formerly not till Class IV.

Again, Latin loses no less than 17 hours per week in the whole eight classes, while Greek loses 4 hours.

In the Realgymnasia, Latin is postponed till the Untertertia, and loses 9 hours at Frankfort and 13 hours at Altona. French commences in Class VI instead of IV, and is increased 9 hours at Frankfort and 8 hours at Altona. English commences in Class UII at Frankfort and Class IV at Altona.

One of the important consequences of this rearrangement may be exhibited by a comparison with the Oberrealschule and Realschule, shewing the first three classes together.

Comparison of Classes.

Subjects.	Reform Gymnasium, Frankfort.			Reform Realgym., Frankfort.			Reform Realgym., Altona.			Oberrealschule, Ordinary.			Realschool, Ordinary.		
	Classes.			Classes.			Classes.			Classes.			Classes.		
	VI.	V.	IV.	VI.	V.	IV.	VI.	V.	IV.	VI.	V.	IV.	VI.	V.	IV.
Religion	3	2	2	3	2	2	3	2	2	3	2	2	3	2	2
German	5	4	4	5	4	4	5	4	4	5	4	4	6	5	5
Latin	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...
Greek	...	...	...	...	...	..	...	...	...	...	...	...	..	...	...
French	6	6	6	6	6	6	6	6	5	6	6	6	6	6	6
English	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...
History	...	...	3	...	...	3	...	...	2	...	...	3	...	...	3
Geography	2	2	3	2	2	3	2	2	2	2	2	2	2	2	2
Mathematics ...	5	5	5	5	5	5	5	5	6	5	5	6	4	4	5
Science.....	2	2	3	2	2	3	2	2	2	2	2	2	2	2	2
Writing	2	2	...	2	2	...	2	2	...	2	2	...	2	2	2
Drawing	...	2	2	...	2	2	...	2	2	...	2	2	...	2	2

It is now seen that in the Reform system there is absolutely no difference between the Realgymnasium and the Gymnasium in the work of the first three classes in the Frankfort system[1], and that the Altona programme and that of the Oberrealschule are substantially identical. This exposes the real nature of the reform, viz., that *the programmes of the Gymnasium, the Realgymnasium, and the Oberrealschule shall be identical for the first three classes* (VI to IV).

8. *The Significance of the Reform System.*—The great defect of the generally-existing German system is that a boy's career has, practically, to be decided too early. A reference to the analysis of the ordinary system will shew that the education is differentiated from the beginning—that is to say, the career has to be decided upon when a lad is 9 or 10 years of age. *Under the Reform system the decision as to career need not be made till* 12 *or* 13 *years of age*, since the three types of school are identical up to that age.

In the judgment of the Commissioner, *the securing of identity of secondary education up to the latest possible period, and a recognition of the academic equality of the several (three) formes of higher education are among the most important of recent educational advances.*

In this connection it should be pointed out that *this identity is significant only with thorough education.* An assertion that any particular system, which happens to exhibit no differences in education up to the age of 12 or 13, expresses the same principle, merely because, for example, it includes, practically, only the three R's, must be recognised as missing the whole point. The Reform system of Germany is really a preparation for the higher stage of secondary education, and has within it the true disciplinary elements, and is sufficiently broad.

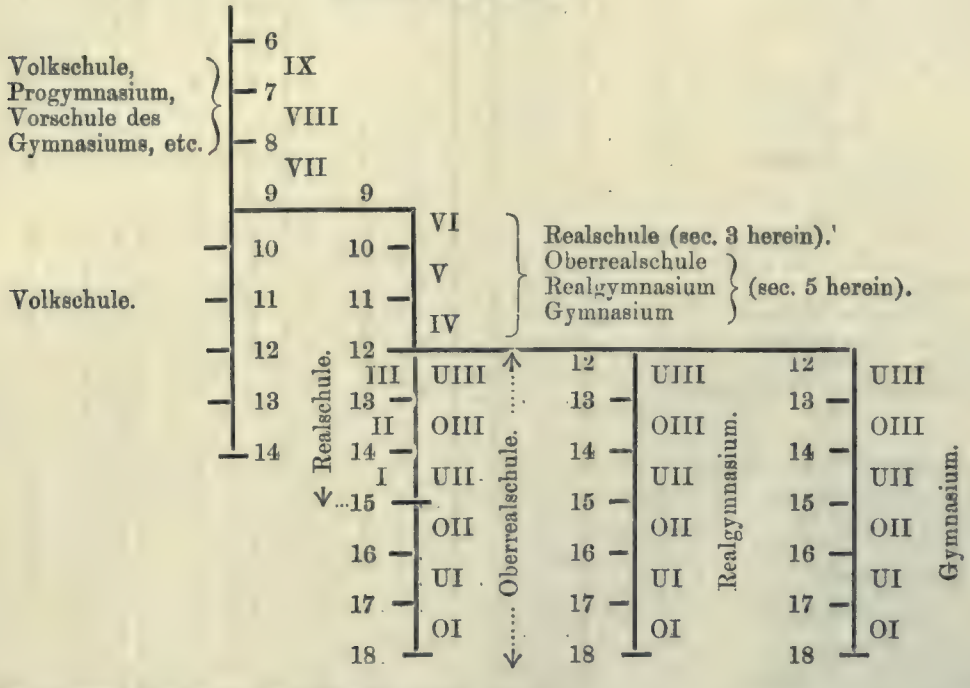
It may here be mentioned that it is customary for those who are going on to the Gymnasium to attend the preparatory classes (Vorbereitungsklassen) in what really constitutes the lowest division of the Gymnasium (das Progymnasium oder die Vorschule des Gymnasiums.) Those who attend the Folkschools (Volkschulen) may go on to the Realschools (Realschulen), but, it is somewhat exceptional for them to go on to the three higher secondary schools. Still the Folkschool is so constituted that there is nothing to prevent the pupils leaving it to enter the three classes of higher school now under consideration.[2]

When one takes into consideration the whole German system of education, the Reform system has this consequence, that up, say, to 9 or 10 years of age, it is (excepting socially) immaterial what class of school children attend. At that age—and the grade of intelligence is then fairly well indicated—it is necessary, if one would lose no time, to decide whether some form of higher education will be attempted or not. If not, the Folkschool will suffice. That type of school will not thoroughly qualify, under the German or any other system, for the higher walks of life. However much half-educated people may be led away by the feeling that it does not matter, that fact must not be lost sight of in judiciously dealing with educational systems.

At 9 or 10 years of age, under the Reform system, the pupil who elects to attempt one of the higher forms of education goes on with the first three classes of any higher school. When he has passed through these he is then 12 or 13, and must decide whether he wants a classical (Greek-Latin) education, a Latin-modern-language-science education, or a modern-languages-science education. This may be represented as follows :—

REFORM SYSTEM OF PRUSSIA.

Secondary Education.



This diagram illustrates the following points, viz. :—

(1) That the lower division of the Realschule, Oberrealschule, Realgymnasium, and Gymnasium under the Reform system are all alike.
(2) That the upper division of the Realschule is the lower division of the Oberrealschule.
(3) That the critical decisions have to be made at the ages of 9 and 12.
(4) That the pupil who has entered the Realschule can go on to the work of the Oberrealschule if at 15 years of age he feels disposed to qualify for technological professions. 9.

[1] In the Altona system there is no difference in the work of the first two classes.
[2] See Interim Report, Chap. VI, secs. 1, 27.

9. *Curricula in Various Parts of Germany.*—The curricula of the same type of school are by no means identical throughout the German provinces. The following table is prepared from programmes obtained by the Commissioner while travelling through that country, and are for the year 1902, and they shew clearly enough the absence of uniformity.

It is, of course, to be remembered that only those subjects which are obligatory and essential are included. Besides these there are, of course, optional subjects, for which adequate teaching provision is made.

Curricula in Various Parts of Germany.

GYMNASIA.

	Classes and Hours per Week.												
	IX.	VIII.	VII.	VI.	V.	IV.	UIII.	OIII.	UII.	OII.	UI.	OI.	
RELIGION.													*Total.
All Gymnasia	2	2	2	3 or 2	2	2	2	2	2	2	2	2	19 or 18
GERMAN.													Total.
Friedr. Werdersches Gym., Berlin ...	6	7	8	4	3	3	2	2	3	3	3	...	23
K. Wilhelms Gym., Berlin	6	6	7	4	3	3	2	2	3	3	3	3	26
Wilhelms Gym., Hamburg	...	...	...	3	2	2	2	2	2	2	3	3	21
Städt. Lyceum I., Hannover	...	5	6	4	3	3	2	2	3	3	3	3	26
Karls Gym., Stuttgart	...	...	8	3	3	2	2	2	2	2	3	3	22
Gym. Heil. Kreuz., Dresden ...													
K. Gym., Dresden, Neustadt ...	...	...	...	4	3	3	2	2	2	3	3	3	25
Vitzthum Gym., Dresden													
K. Luitpold Gym., München	...	...	...	4	3	2	2	2	2	3	4	5	27
Lyceum, Strassburg	13	9	9	5	3	3	2	2	2	2	3	3	25
Prot. Gym., Strassburg	7½	7½	7	5	3	3	2	2	2	2	3	3	25
Bischöflich. Gym., St. Stephan, Strassburg..	13	13	10	5	3	3	2	2	2	2	3	3	25
K. Kath. Gym., Marzell., Köln	...	...	...	4	3	3	2	2	2	3	3	3	25
Gym., Heidelberg	...	...	...	3	3	2	2	2	2	2	3	3	22
Gr. Herz. Ostergym., Mainz	12	10	9	4	4	3	2	2	3	3	3	3	27
Kn. Augusta Gym., Coblenz ...	5	2	6	3	2	...	...	...	...	...	...	...	...
	...	...	...	1	1	3	2	2	3	3	3	3	24
Goethe Gym., Frankfurt	...	...	...	5	4	4	3	3	3	3	3	3	31
K.K. Friedrichs Gym., Frankfurt... ...	11	7	9	4	3	3	2	2	3	3	3	3	26
LATIN.													Total.
Friedr. Werdersches Gym., Berlin ...	...	...	...	8	8	8	8	8	7	7	7	...	61
K. Wilhelms Gym., Berlin	...	...	...	8	8	8	8	8	7	7	7	7	68
Wilhelms Gym., Hamburg	...	...	...	8	8	8	8	8	8	7	7	7	69
Städt. Lyceum I., Hannover	...	...	...	8	8	8	8	8	7	7	7	7	68
Karls Gym., Stuttgart	...	...	...	10	10	10	10	10	8	8	8	7	81
Gym. Heil. Kreuz., Dresden	...	...	...	9	9	8	8	8	8	10	9	8	77
K. Gym., Dresden, Neustadt	...	...	...	...	...	...	...	...	...	...	...	...	...
Vitzthum Gym., Dresden	...	...	...	9	9	8	9	8	8	7	8	8	74
K. Luitpold Gym., München	...	...	...	8	8	8	8	8	7	7	6	6	66
Lyceum, Strassburg	...	...	...	7	8	8	8	8	8	8	8	8	71
Prot. Gym., Strassburg	...	...	...	7	8	8	8	8	8	8	8	8	71
Bischöflich. Gym., St. Stephan, Strassburg..	...	...	...	7	8	8	8	8	8	8	8	8	71
K. Kath. Gym., Marzell., Köln	...	...	...	8	8	7	7	7	7	7	7	7	65
Gym., Heidelberg	...	...	...	9	9	8	8	8	8	8	7	7	72
Gr. Herz. Ostergym, Mainz	...	...	...	9	9	8	7	7	7	7	7	7	68
Kn. Augusta Gym., Coblenz	...	...	...	8	8	8	8	8	7	7	7	7	68
Goethe Gym., Frankfurt	...	...	...	...	...	...	10	10	8	8	8	7	51
K.K. Friedrichs Gym., Frankfurt... ...	...	...	...	8	8	8	8	8	7	7	7	7	68
GREEK.													*Total.
Friedr. Werdersches Gym., Berlin ...	...	...	...	...	...	...	6	6	6	6	6	6	36
K. Wilhelms Gym., Berlin...	...	...	...	...	...	...	6	6	6	6	6	6	36
Wilhelms Gym., Hamburg...	...	...	...	...	...	...	6	6	6	6	6	6	36
Städt. Lyceum I., Hannover	...	...	...	...	...	...	6	6	6	6	6	6	36
Karls Gym., Stuttgart	...	...	...	...	...	...	7	7	7	7	6	6	40
Gym. Heil. Kreuz., Dresden	...	...	...	...	...	...	7	7	7	7	7	7	42
K. Gym., Dresden, Neustadt	...	...	...	...	...	...	7	7	7	7	7	7	42
Vitzthum Gym., Dresden	...	...	...	...	...	...	7	7	7	7	6	7	41
K. Luitpold Gym., München	...	...	...	...	...	...	6	6	6	6	6	6	36
Lyceum, Strassburg	...	...	...	...	...	...	6	6	6	6	6	6	36
Prot. Gym., Strassburg	...	...	...	...	...	...	6	6	6	6	6	6	36
Bischöflich Gym., St. Stephan, Strassburg...	...	...	...	...	...	...	6	6	6	6	6	6	36
K. Kath. Gym., Marzell., Köln	...	...	...	...	...	...	6	6	6	6	6	6	36
Gym., Heidelberg	...	...	...	...	...	...	6	6	6	6	6	6	36
Gr. Herz. Ostergym., Mainz	...	...	...	...	...	...	6	6	6	6	6	6	36
Kn. Augusta Gym., Coblenz	...	...	...	...	...	...	6	6	6	6	6	6	36
Goethe Gym., Frankfurt	...	...	...	...	...	...	...	...	8	8	8	8	32
K.K. Friedrichs Gym., Frankfurt... ...	...	...	...	...	...	...	6	6	6	6	6	6	36

* Excluding Vorschulen.

GYMNASIA—*continued.*

	Classes and Hours per Week.												
	IX.	VIII.	VII.	VI.	V.	IV.	UIII.	OIII.	UII.	OII.	UI.	OI.	
French.													*Total.
Friedr. Werdersches Gym., Berlin ...	...	...	...	...	...	4	2	2	3	3	3	3	20
K. Wilhelms Gym., Berlin...	...	...	...	...	...	4	2	2	3	3	3	3	20
Wilhelms Gym., Hamburg...	...	...	...	...	...	5	3	3	2	2	2	2	19
Städt. Lyceum I., Hannover	...	...	...	...	...	4	2	3	3	2	2	2	17
Karls Gym., Stuttgart	...	...	...	...	...	4	2	2	3	3	2	2	18
Gym. Heil. Kreuz., Dresden	...	...	...	...	...	5	3	2	2	2	2	2	18
K. Gym., Dresden, Neustadt	...	...	...	...	...	5	3	2	2	2	2	2	18
Vitzthum Gym., Dresden	...	...	...	...	...	5	3	3	3	3	3	2	22
K. Luitpold Gym., München	...	...	...	...	...	...	...	...	3	3	2	2	10
Lyceum, Strassburg	...	...	...	...	4	4	3	3	3	3	2	2	24
Prot. Gym., Strassburg	...	...	...	...	4	4	3	3	3	3	2	2	24
Bischöflich Gym., St. Stephan, Strassburg...	...	...	...	...	4	4	5	3	3	3	2	2	26
K. Kath. Gym., Marzell., Köln	...	...	...	...	...	4	3	3	3	2	2	2	19
Gym., Heidelberg	..	...	...	...	...	4	3	3	3	3	2	2	20
Gr. Herz. Ostergym., Mainz	...	...	...	...	...	5	3	3	3	3	3	3	23
Kn. Augusta Gym., Coblenz	...	...	...	...	...	4	2	2	3	3	3	3	20
Goethe Gym., Frankfurt	...	...	...	6	6	6	3	2	2	2	2	2	31
K.K. Friedrichs Gym., Frankfurt... ...	...	...	...	...	...	4	2	2	3	3	3	3	20
Arithmetic and Mathematics.													*Total.
Friedr. Werdersches Gym., Berlin ...	...	...	...	4	4	4	3	3	4	4	4	4	34
K. Wilhems Gym., Berlin...	...	...	...	4	4	4	3	3	4	4	4	4	34
Wilhelms Gym., Hamburg	...	...	...	4	4	4	3	3	3	4	3	3	31
Städt. Lyceum I., Hannover	...	...	...	4	4	4	3	3	4	4	4	4	34
Karls Gym., Stuttgart	...	...	6	4	4	3½	3	3	2	2	4	3	28½
Gym. Heil, Kreuz, Dresden	...	...	...	3	4	3	3	3	4	4	4	4	33
K. Gym., Dresden, Neustadt	...	...	...	3	4	3	3	4	4	4	4	4	33
Vitzthum Gym., Dresden	...	...	...	3	4	4	3	4	4	4	4	4	34
K. Luitpold Gym., München	...	...	...	3	3	3	2	4	4	3	3	4	29
Lyceum, Strassburg	5	5	5	4	3	4	4	4	4	4	4	4	35
Prot. Gym., Strassburg	...	...	...	4	3	4	4	4	4	4	4	4	35
Bischöflich Gym., St. Stephan, Strassburg...	6	3	4	4	3	4	4	4	4	4	4	4	35
K. Kath. Gym., Marzel, Köln	...	...	...	4	4	4	3	3	4	4	4	4	34
Gym., Heidelberg	...	...	...	4	4	3	3	3	4	4	4	4	33
Gr. Herz. Ostergym., Mainz.	...	...	...	3	4	4	4	4	4	4	4	4	35
Kn. Augusta Gym., Coblenz	...	...	...	4	4	4	3	3	4	4	4	4	34
Goethe Gym., Frankfurt	...	...	...	5	5	5	4	4	3	3	3	3	35
K.K. Friedrichs Gym., Frankfurt... ...	...	...	...	4	4	4	3	3	4	4	4	4	34
Natural Science.													Total.
Friedr. Werdersches Gym., Berlin ...	...	...	...	2	2	2	2	2	2	2	2	2	18
K. Wilhelms Gym., Berlin...	...	...	...	2	2	2	2	2	2	2	2	2	18
Wilhelms Gym., Hamburg...	...	...	...	2	2	2	1	1	2	2	2	2	16
Städt. Lyceum I., Hannover	...	...	...	2	2	2	2	2	2	2	2	2	18
Karls Gym., Stuttgart	...	2	...	2	2	2	...	...	2	2	2	2	14
Gym. Heil. Kreuz., Dresden	...	...	...	2	2	2	2	2	2	2	2	2	18
K. Gym., Dresden, Neustadt	...	...	...	2	2	2	2	2	2	2	2	2	18
Vitzthum Gym., Dresden	...	...	...	2	2	2	2	2	2	2	2	2	18
K. Luitpold Gym., München	...	...	...	1	1	1	1	1	...	2	2	...	9
Lyceum, Strassburg	...	...	...	2	2	2	2	2	...	...	...	...	10
Prot. Gym., Strassburg	...	...	...	2	2	2	2	2	2	2	2	2	18
Bischöflich Gym., St. Stephan, Strassburg...	...	...	...	2	2	2	2	2	2	2	2	2	18
K. Kath., Gym., Marzell., Köln	...	...	...	2	2	2	2	2	2	2	2	2	18
Gym., Heidelberg	...	...	...	2	2	2	2	2	2	2	2	2	18
Gr. Herz. Ostergym., Mainz	...	...	...	2	2	2	2	2	2	2	2	2	18
Kn. Augusta Gym., Coblenz	...	...	...	2	2	2	2	2	2	2	2	2	18
Goethe Gym., Frankfurt	...	...	...	2	2	2	2	2	2	2	2	2	18
K.K. Friedrichs Gym., Frankfurt... ...	...	...	...	2	2	2	2	2	2	2	2	2	18

* Excluding Vorschulen.

GYMNASIA—*continued.*

	Classes and Hours per Week.											
	IX.	VIII.	VII.	VI.	V.	IV.	UIII.	OIII.	UII.	OII.	UI.	OI.	
History.													Total.
Friedr. Werdersches Gym., Berlin	...	...	...	1	1	2	1½	1½	1½	1½	1½	1½	13
K. Wilhelms Gym., Berlin	...	...	...	1	1	2	2	2	2	1½	1½	1½	14½
Wilhelms Gym., Hamburg	...	...	...	1½	1½	2	1½	1½	1½	1½	1½	1½	14
Städt. Lyceum I, Hannover	...	...	...	...	...	2	2	2	2	1½	1½	1½	12½
Karls Gym., Stuttgart	...	...	...	...	2	4	1½	1½	2	2	2	2	17
Gym. Heil. Kreuz., Dresden	...	...	...	2	2	2	2	2	1	1½	1½	1½	15½
K. Gym., Dresden, Neustadt	...	...	...	2	2	2	2	2	2	3	3	3	21
Vitzthum Gym., Dresden	...	...	...	2	2	2	2	2	2	3	3	3	21
K. Luitpold Gym., München	...	..	...	...	...	2	2	2	2	2	3	3	16
Lyceum, Strassburg	...	...	...	...	...	1½	1½	1½	1½	1½	1½	1½	10½
Prot. Gym., Strassburg	...	...	...	1	1	1½	1½	1½	1½	1½	1½	1½	12½
Bischöflich Gym., St. Stephan, Strassburg	...	...	...	1	1	1½	1½	1½	1½	1½	1½	1½	12½
K. Kath. Gym., Marzell., Köln	...	...	...	1	1	2	1½	1½	1½	1½	1½	1½	13
Gym., Heidelberg	...	...	...	1	1	1	1	1	1½	1½	1½	1½	11
Gr. Herz. Ostergym., Mainz	...	...	...	...	...	2	1½	1½	1½	1½	1½	1½	11
Kn. Augusta Gym., Coblenz	...	...	...	1	1	2	2	2	2	1½	1½	1½	14½
Goethe Gym., Frankfurt	...	...	...	1	1	3	1½	2	1	1	1	1½	13
K.K. Friedrichs Gym., Frankfurt	...	...	...	1	1	2	1½	1½	1½	1½	1½	1½	13
Geography.													Total.
Friedr. Werdersches Gym., Berlin	...	...	...	1	1	2	1½	1½	1½	1½	1½	1½	13
K. Wilhelms Gym., Berlin	...	...	...	1	1	2	1	1	1	1½	1½	1½	11½
Wilhelms Gym., Hamburg	...	...	...	1½	1½	2	1½	1½	1½	1½	1½	1½	14
Städt. Lyceum I., Hannover	...	...	...	2	2	2	1	1	1	1½	1½	1½	13½
Karls Gym., Stuttgart	...	...	...	1	1	1	1½	1½	2	2	...	1	11
Gym. Heil., Kreuz., Dresden	...	...	...	1	2	2	1	2[1]	1	1½	1½	1½	13½
K. Gym., Dresden, Neustadt	...	..	...	1	2	2	1	1	...	...	...	...	7
Vitzthum Gym., Dresden	...	...	...	1	2	2	1	1	...	...	...	...	7
K. Luitpold Gym., München	...	...	...	2	2	2	2	1	...	...	...	...	9
Lyceum, Strassburg	...	...	...	2	2	1½	1½	1½	1½	1½	1½	1½	14½
Prot. Gym., Strassgurg	...	...	...	1	1	1½	1½	1½	1½	1½	1½	1½	12½
Bischöflich Gym., St. Stephan, Strassburg	...	...	...	1	1	1½	1½	1½	1½	1½	1½	1½	12½
K. Kath. Gym., Marzell., Köln	...	...	...	1	1	2	1½	1½	1½	1½	1½	1½	13
Gym., Heidelberg	...	...	...	1	1	1	1	1	1½	1½	1½	1½	11
Gr. Herz. Ostergym., Mainz	...	...	...	2	3	2	1½	1½	1½	1½	1½	1½	16
Kn. Augusta Gym., Coblenz	...	...	...	1	1	2	1	1	1	1½	1½	1½	11½
Goethe Gym., Frankfurt	...	...	...	1	1	3	1½	2	1	1	1	1½	13
K.K. Friedrichs Gym., Frankfurt	...	...	...	1	1	2	1½	1½	1½	1½	1½	1½	13
Writing.													Total.
Friedr. Werdersches Gym., Berlin	...	...	...	2	2	...	...	...	...	...	...	...	4
K. Wilhelms Gym., Berlin	...	...	...	2	2	...	...	...	...	...	...	...	4
Wilhelms Gym., Hamburg	...	...	...	2	2	...	...	...	...	...	...	...	4
Städt. Lyceum I., Hannover	...	...	...	2	2	...	...	...	...	...	...	...	4
Karls Gym., Stuttgart	...	...	3	1	1	1	...	...	...	...	...	...	3
Gym. Heil. Kreuz., Dresden	...	...	...	2	1	1	...	...	...	...	...	...	4
K. Gym., Dresden, Neustadt	...	...	...	...	...	...	...	...	...	...	...	...	...
Vitzthum Gym., Dresden	...	...	...	2	1	...	...	...	...	...	...	...	3
K. Luitpold Gym., München	...	...	...	2	1	1	...	...	..	...	...	...	4
Lyceum, Strassburg	...	4	4	2	(2)[2]	...	...	...	...	...	...	...	4
Prot. Gym., Strassburg	...	...	...	2	(1)[2]	...	...	...	...	...	...	...	3
Bischöflich Gym., St. Stephan, Strassburg	3	3	3	...	...	...	...	...	...	...	...	...	...
K. Kath. Gym., Marzell., Köln	...	...	...	2	2	...	...	...	...	...	...	...	4
Gym., Heidelberg	...	...	...	...	...	...	...	...	...	...	...	...	...
Gr. Herz. Ostergym., Mainz	...	...	...	3	2	...	...	...	...	...	...	...	5
Kn. Augusta Gym., Coblenz	...	...	...	2	2	1	1	...	...	...	...	...	6
Goethe Gym., Frankfurt	...	...	...	2	2	1	...	...	...	...	...	...	5
K.K. Friedrichs Gym., Frankfurt	...	...	...	2	2	2	...	...	...	...	...	...	6

[1] Only in Summer. In many cases the History and Geography are taught together; the time is then divided between the two columns.

[2] Optional.

GYMNASIA—*continued.*

	Classes and Hours per Week.												
	IX.	VIII.	VII.	VI.	V.	IV.	UIII.	OIII.	UII.	OII.	UI.	OI.	
DRAWING.													Total.
Friedr. Werdersches Gym., Berlin ...	...	...	...	...	2	2	2	2	2	1	1	...	12
K. Wilhelms Gym., Berlin	...	...	...	2	2	2	2	2	...	...	...	...	10
Wilhelms Gym., Hamburg	...	...	...	...	2	2	2	2	...	...	...	...	8
Städt. Lyceum I., Hannover	...	...	...	...	2	2	2	2	...	...	...	...	8
Karls Gym., Stuttgart	...	...	...	...	...	2	2	2	2	2	2	1	13
Gym. Heil. Kreuz., Dresden	...	...	...	...	2	2	2	2	...	...	...	...	8
K. Gym., Dresden, Neustadt	...	...	...	...	...	...	...	...	...	...	...	...	...
Vitzthum Gym., Dresden	...	...	...	...	2	2	...	...	...	...	...	...	4
K. Luitpold Gym., München	...	...	...	...	2	2	...	...	...	...	...	...	4
Lyceum, Strassburg...	...	...	...	(2)	2	2	(2)	(2)	(2)	(2)	(2)	(2)	18
Prot. Gym., Strassburg	...	...	...	...	2	2	(2)	(2)	(2)	(2)	(2)	(2)	16
Bischöflich Gym., St. Stephan, Strassburg...	...	...	...	...	...	...	...	...	...	...	...	...	...
K. Kath. Gym., Marzell., Köln.	...	...	...	...	2	2	2	2	...	...	...	...	8
Gym., Heidelberg	...	...	...	2	2	2	2	2	...	2	...	2	14
Gr. Herz. Ostergym., Mainz	...	...	...	2	2	2	1	1	...	$1\frac{1}{2}$[2]	...	...	$9\frac{1}{2}$
Kn. Augusta Gym., Coblenz	...	...	...	...	2	2	2	2	...	...	...	2[2]	10
Goethe Gym., Frankfurt	...	...	...	...	2	2	2	2	...	...	...	...	8
K.K. Freidrichs Gym., Frankfurt... ...	...	...	...	...	2	2	2	2	...	...	...	...	8

[2] Optional.

Curricula in various parts of Germany.

REALGYMNASIA.

	Classes and Hours per Week.											
	IX.	VIII.	VII.	VI.	V.	IV.	UIII.	OIII.	UII.	OII.	UI.	OI.	
RELIGION.													*Total.
All Realgymnasia	...	...	...	2 3	...	...	...	...	...	...	...	...	18 19
					2	2	2	2	2	2	2	2	
GERMAN.													Total.
Städt. Realg., Coblenz	...	...	...	4	3	3	3	3	3	3	3	3	28
Grossh. Realg., Mainz	...	...	...	6	5	4	3	3	3	3	3	3	33
Musterschule, Frankfurt ...	...	...	...	4	3	4	3	3	3	3	3	3	29
Wöhler Realg., Frankfurt (1) ...	...	...	...	4	3	3	3	3	3	3	3	3	28
" " " (2) ...	...	...	...	5	4	4	3	3	3	3	3	3	31
Realgym. I., Hannover	...	...	...	4	3	3	3	3	3	3	3	3	28
Städt. Realg., Düsseldorf ...	...	...	...	4	3	3	3	3	3	3	3	...	25
LATIN.													*Total.
Städt. Realg., Coblenz	...	...	...	8	8	7	5	5	4	4	4	4	49
Grossh. Realg., Mainz	...	...	...	8	8	7	6	6	5	5	5	5	55
Musterschule, Frankfurt ...	...	...	...	...	...	...	8	8	6	6	6	6	40
Wöhler Realg., Frankfurt (1) ...	...	...	...	8	8	7	4	4	4	4	4	4	47
" " " (2) ...	...	...	...	...	...	...	8	8	6	6	6	6	40
Realgym. I., Hannover	...	...	...	8	8	4	3	2	2	4	4	4	39
Städt. Realg., Düsseldorf ...	...	...	...	8	8	8	5	5	4	4	4	...	46
FRENCH.													Total.
Städt. Realg., Coblenz	...	...	...	...	...	5	4	4	4	4	4	4	29
Grossh. Realg., Mainz	...	...	...	...	...	5	5	5	4	4	4	4	31
Musterschule, Frankfurt ...	...	...	...	6	6	6	4	4	3	3	3	3	38
Wöhler Realg., Frankfurt (1) ...	...	...	...	...	...	5	5	5	4	4	4	4	31
" " " (2) ...	...	...	...	6	6	6	4	4	3	3	3	3	38
Realgym. I., Hannover	...	...	...	...	...	5	4	4	4	4	4	4	29
Städt. Realg., Düsseldorf ...	...	...	...	...	...	4	4	4	4	4	4	...	24

* Excluding Vorschule.

REALGYMNASIA—*continued.*

	Classes and Hours per Week.												
	IX.	VIII	VII.	VI.	V.	IV.	UIII.	OIII.	UII.	OII.	UI.	OI.	
English.													Total.
Städt. Realg., Coblenz ...	...	...	...	...	...	...	3	3	3	3	3	3	18
Grossh. Realg., Mainz ...	...	...	...	...	...	...	3	3	3	3	3	3	18
Musterschule, Frankfurt ...	...	...	...	...	...	...	...	...	6	4	4	4	18
Wöhler Realg., Frankfurt (1) ...	...	...	...	...	...	...	3	3	3	3	3	3	18
„ „ „ (2) ...	...	...	...	...	...	...	...	...	6	4	4	4	18
Realgym. I., Hannover	...	...	...	...	...	...	3	3	3	3	3	3	18
Städt. Realg., Düsseldorf ...	...	...	...	...	...	...	3	3	3	3	3	...	15
History.													[a]Total.
Städt. Realg., Coblenz	...	...	...	1	1	2	2	2	2	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$14\frac{1}{2}$
Grossh. Realg., Mainz	...	...	...	...	...	2	2	2	2	2	2	2	14
Musterschule, Frankfurt ...	...	...	...	1	1	3	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	14
Wöhler Realg., Frankfurt (1) ...	...	...	...	1	1	2	2	2	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	14
„ „ „ (2) ...	...	...	...	1	1	3	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	14
Realgym. I., Hannover	...	...	...	...	...	2	2	2	2	$1\frac{1}{2}$	3	3	$15\frac{1}{2}$
Städt. Realg., Düsseldorf ...	...	...	...	...	...	2	2	2	2	3	3	...	14
Geography.													Total.
Städt. Realg. Coblenz	...	...	...	1	1	2	2	2	1	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	[a]$13\frac{1}{2}$
Grossh. Real., Mainz	...	...	...	1	1	1	1	2	2	2	2	2	14
Musterschule, Frankfurt ...	...	...	...	1	1	3	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	14
Wöhler Realg., Frankfurt (1) ...	...	...	...	1	1	2	2	2	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	14
„ „ „ (2) ...	...	...	...	1	1	3	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	14
Realgym. I., Hannover	...	...	...	2	2	2	2	2	1	$1\frac{1}{2}$	...	...	$12\frac{1}{2}$
Stadt. Realg., Düsseldorf ...	...	...	...	2	2	2	2	2	1	...	...	...	11
Arithmetic and Mathematics.													Total.
Städt. Realg., Coblenz	...	...	...	4	4	4	5	5	5	5	5	5	42
Grossh. Realg., Mainz	...	...	...	5	4	5	5	5	5	5	5	5	44
Musterschule, Frankfurt ...	...	...	...	5	5	5	4	4	4	5	5	5	42
Wöhler Realg., Frankfurt (1) ...	...	...	...	4	4	4	5	5	5	5	5	5	42
„ „ „ (2) ...	...	...	...	5	5	5	4	4	4	5	5	5	42
Realgym. I., Hannover	...	...	...	4	4	4	4	5	5	5	5	5	41
Städt. Realg., Düsseldorf ...	...	...	...	4	4	4	5	5	5	5	5	5	42
Natural Science.													Total.
Städt. Realg., Coblenz	...	...	...	2	2	2	2	2	4	5	5	5	29
Grossh. Realg., Mainz	...	...	...	2	2	2	2	2	5	5	5	5	30
Musterschule, Frankfurt... ...	...	...	...	2	2	3	3	3	2	4	4 + 2	4 + 2	27 + 4[1]
Wöhler Realg., Frankfurt (1) ...	...	...	...	2	2	2	2	2	5	5	5 + (2)	5 + (2)	30 + (4)[1]
„ „ „ (2) ...	...	...	...	2	2	3	3	3	3	4	4 + (2)	4 + (2)	28 + (4)[1]
Realgym. I, Hannover	...	...	...	2	2	2	2	2	4	5	5	5	29
Städt. Realg., Düsseldorf ...	...	...	...	2	2	2	2	2	4	5	5	...	24
Writing.													Total.
Städt. Realg., Coblenz	...	...	...	2	2	...	...	...	...	...	...	...	8
Grossh. Realg., Mainz	...	...	...	...	...	...	...	...	...	...	...	...	.....
Musterschule, Frankfurt ...	...	...	...	2	2	...	...	...	...	...	...	...	4
Wöhler Realg., Frankfurt (1) ...	...	...	...	2	2	...	...	...	...	...	...	...	4
„ „ „ (2) ...	...	...	...	2	2	(2)	...	...	...	...	...	...	6
Realgym. I, Hannover	...	...	...	...	...	...	...	...	...	...	...	...	.....
Städt. Realg., Düsseldorf ...	...	...	...	2	2	...	...	...	...	...	...	...	4
Drawing.													Total.
Städt. Realg., Coblenz	...	...	...	...	2	2	2	2	2	2	2	2	16
Grossh. Realg., Mainz	...	...	...	...	2	2	2	2	2	...	2	...	12
Musterschule, Frankfurt ...	...	...	...	...	2	2	2	2	2	4	4	...	18
Wöhler Realg., Frankfurt (1) ...	...	...	...	2	2	2	2	2	2	2	2	2	18
„ „ „ (2) ...	...	...	...	2	2	2	2	2	2	2	2	2	18
Realgym. I, Hannover	...	...	...	...	2	2	2	2	2	2	2	2	16
Städt. Realg., Düsseldorf ...	...	...	...	...	2	2	2	2	2	2	2	...	14

[a] Excluding Vorschulen.

[1] Optional Laboratory Practice.

Curricula in various parts of Germany.

REALSCHOOLS.

	Classes and Hours per Week.												
	IX.	VIII	VII.	VI.	V.	IV.	UIII.	OIII.	UII.	OII.	UI.	OI.	
Religion.													Total.
In all Realschulen	3 / 2	2	2	2	2	2	2	2	2	2	2	2	18 / 19
German.													Total.
Oberr. Holstenthor., Hamburg	...	...	...	6	5	4	4	3	3	4	4	4	37
Oberr., Heidelberg	...	...	...	5	5	4	4	4	4	4	4	4	38
Gym. of Reals. Kaiser Friedrich Schule, Charlottenburg.	9	8	9	4	3	4	3	3	3	...	...	...	20
Städt. Oberr., Charlottenburg	9	8	9	6	5	4	4	4	3	4	4	4	38
11th Reals., Berlin	...	...	...	6	6	4	4	3	2	...	...	...	25
K. Wilhelms Reals., Stuttgart	...	...	7½	4	4	4	4	3	2	2	2	2	27
Oberr., Marburg	...	...	...	5	4	4	3	3	3	4	4	...	30
Grossh. Oberr., Karlsruhe	...	...	...	5	5	4	4	4	4	4	4	4	38
2nd Städt. Reals., Dresden	...	...	...	6	6	5	4	4	4	...	...	...	29
Luitpold-Kreisreals., München	...	...	...	6	5	4	4	4	4	...	...	...	27
French.													Total.
Oberr. Holstenthor., Hamburg	...	...	...	6	6	6	5	5	5	4	4	4	45
Oberr., Heidelberg	...	...	...	6	6	6	6	5	5	4	4	4	46
Gym. of Reals. Kaiser Friedrich Schule, Charlottenburg.	...	...	...	6	6	6	6	6	5	...	...	...	35
Städt. Oberr., Charlottenberg	...	...	...	6	6	6	6	5	5	4	4	4	46
11th Reals., Berlin	...	...	...	...	...	8	8	6	6	...	...	...	28
K. Wilhelms Reals., Stuttgart	...	...	8	8	9	7	6	6	5	5	4	4	54
Oberr., Marburg	...	...	...	6	6	6	6	6	5	4	4	...	43
Grossh. Oberr., Karlsruhe	...	...	...	6	6	6	6	5	5	4	4	4	46
2nd Städt. Reals., Dresden	...	...	...	3	6	6	6	5	5	...	...	...	31
Luitpold-Kreisreals., München	...	...	...	6	6	5	4	3	3	...	...	...	27
English.													Total.
Oberr., Holstenthor, Hamburg	...	...	...	...	...	4	4	4	4	4	4	4	28
Oberr., Heidelberg	...	...	...	...	...	4	4	4	4	4	4	4	28
Gym. of Reals. Kaiser Friedrich Schule, Charlottenburg.	...	...	...	...	...	...	5	4	4	...	...	...	13
Städt. Ober., Charlottenburg	...	...	...	...	...	...	5	4	4	4	4	4	25
11th Reals, Berlin	...	...	...	...	...	...	...	6	6	...	...	...	12
K. Wilhelms Reals, Stuttgart	...	...	...	...	...	...	3	3	3	3	3	3	18
Oberr., Marburg	...	...	...	...	...	...	5	4	4	4	4	...	21
Grossh. Oberr, Karlsruhe	...	...	...	...	...	...	4	4	4	4	4	4	24
2nd Städt. Reals., Dresden	...	...	...	...	...	...	4	4	4	...	...	...	12
Luitpold-Kreisreals., München	...	...	...	...	...	...	...	5	5	...	...	...	10
History.													Total.
Oberr., Holstenthor., Hamburg	...	...	...	...	...	2	2	2	2	1½	1½	1½	12½
Oberr., Heidelberg	...	...	...	...	...	2	2	2	2	3	3	3	17
Gym. of Reals. Kaiser Friedrich Schule, Charlottenburg	...	...	...	...	...	3	2	2	2	...	...	...	9
Städt. Oberr., Charlottenburg	...	½	½	1	1	2½	2	2	1½	2	2	2	16
11th Reals., Berlin	...	...	...	...	...	2	2	2	2	...	...	...	8
K. Wilhelms Reals., Stuttgart	...	...	...	...	2	2	1½	1½	2	2	2	2	15
Oberr., Marburg	...	...	...	...	...	3	2	2	2	3	3	...	15
Grossh. Oberr., Karlsruhe	...	...	...	...	...	2	2	2	2	3	3	3	17
2nd Städt. Reals., Dresden	...	...	...	1	2	2	2	2	2	...	...	...	11
Luitpold-Kreisreals., München	...	...	...	...	...	2	2	2	2	...	...	...	8

REALSCHOOLS—*continued.*

	Classes and Hours per Week.											
	IX.	VIII.	VII.	VI.	V.	IV.	UIII.	OIII.	UII.	OII.	UI.	OI.	
Geography.													Total
Oberr., Holstenthor., Hamburg	...	...	...	2	2	2	2	2	2	1½	1½	1½	16½
Oberr., Heidelberg	...	...	...	2	2	2	2	2	...	...	...	...	10
Gym. of Reals. Kaiser Friedrich Schule, Charlottenburg	...	...	...	2	2	3	2	2	1	...	...	...	12
Städt. Oberr., Charlottenburg	...	½	½	1	1	2½	2	2	1½	2	2	2	16
11th Reals., Berlin	...	...	...	3	3	2	2	1	1	...	...	...	12
K. Wilhelms Reals., Stuttgart	...	...	...	2	2	2	1½	1½	2	1	...	1	13
Oberr., Marburg	...	...	...	2	2	2	2	2	1	1	1	...	13
Grossh. Oberr., Karlsruhe	...	...	...	2	2	2	2	2	...	...	...	...	10
2nd Städt. Reals., Dresden	...	...	...	2	2	2	2	2	2	...	...	...	12
Luitpold–Kreisreals., München	...	...	...	2	2	2	2	1	1	...	...	...	10
Arithmetic and Mathematics.													Total.
Oberr. Holstenthor., Hamburg	...	...	...	5	4	4	6	6	6	5	5	5	46
Oberr., Heidelberg	...	...	...	5	5	5	5	5	5	5	5	5	45
Gym. of Reals. Kaiser Friedrich Schule, Charlottenburg.	...	...	...	5	5	6	6	5	5	...	...	...	32
Städt. Oberr., Charlottenburg	...	...	...	4	4	6	5	5	5	5	5	5	44
11th Reals., Berlin	...	...	...	7	6	6	6	5	5	...	...	...	35
K. Wilhelms Reals., Stuttgart	...	...	5	5	6	5	8	8	6	9	10	7	64
Oberr., Marburg	...	...	...	5	5	6	6	5	5	5	5	...	42
Grossh. Oberr., Karlsruhe	...	...	...	5	5	5	5	5	5	5	5	5	45
2nd Städt. Reals., Dresden	...	...	...	5	4	6	6	7	6	...	...	...	34
Luitpold–Kreisreals., München	...	...	...	4	4	5	6	6	6	...	...	...	31
Natural Science.													Total.
Oberr. Holstenthor., Hamburg	...	...	...	2	2	2	2	5	5	6	6	6	36
Oberr., Heidelberg	...	...	...	...	...	...	...	2	4	5	5	5	21
Gym. of Reals. Kaiser Friedrich Schule, Charlottenburg.	...	...	...	2	2	2	2	2	1	...	...	...	11
Städt. Oberr., Charlottenburg	...	...	...	...	...	...	...	2	4	6	6	6	24
11th Reals, Berlin	...	...	...	2	3	2	4	4	4	...	...	...	19
K. Wilhelms Reals, Stuttgart	...	...	1	1	...	2	2	2	3	2	5	5	22
Oberr., Marburg	...	...	...	2	2	2	2	4	4	3	3	...	22
Grossh. Oberr., Karlshule	...	...	...	2	2	2	2	4	4	5	5	5	31
2nd Städt. Reals, Dresden	...	...	...	2	2	2	2	5	6	...	...	...	19
Luitpold–Kreisreals., München	...	...	...	2	2	2	3	5	5	...	...	...	19
Writing.													Total.
Oberr. Holstenthor., Hamburg	...	...	...	2	2	1	1	...	...	...	...	...	6
Oberr., Heidelberg	...	...	...	2	2	2	...	...	3	...	...	...	9
Gym. of Reals. Kaiser Friedrich Schule, Charlottenburg.	...	...	...	2	2	...	...	...	...	...	...	...	4
Städt. Oberr, Charlottenburg	...	...	...	2	2	2	1	...	...	...	...	...	7
11th Reals, Berlin	...	...	...	3	3	...	...	...	...	...	...	...	6
K. Wilhelms Reals, Stuttgart	...	...	3	2	2	1	...	...	...	...	...	...	5
Oberr. Marburg	...	...	...	2	2	2	(1)	(1)[1]	...	...	..	...	8
Grossh. Oberr., Karlsruhe	...	...	...	2	2	2	...	...	2[2]	...	2[2]	...	10
2nd Städt. Reals, Dresden	...	...	...	3	2	2	...	...	...	...	...	...	7
Luitpold–Kreisreals., München	...	..	...	2	1	...	...	...	...	...	...	...	3
Drawing.													Total.
Oberr. Holstenthor., Hamburg	...	...	...	...	2	2	2	2	2	2	2	2	16
Oberr., Heidelberg	...	...	...	2	2	2	2	2	2	2	2	2	18
Gym. of Reals. Kaiser Friedrich Schule, Charlottenburg.	...	...	...	...	2	2	2	2	2	...	...	...	10
Städt. Oberr., Charlottenburg	...	...	...	...	2	2	2	2	2	2	2	...	14
11th Reals, Berlin	...	...	...	2	2	2	2	3	3	...	...	...	14
K. Wilhelms Reals, Stuttgart	...	...	...	...	...	3	4	5	6	4	4	5	31
Oberr., Marburg	...	...	...	...	2	2	2	2	2	2	2	...	14
Grossh. Oberr., Karlsruhe	...	...	...	2	2	2	2	2	2	2	2	2	18
2nd Städt. Reals., Dresden	...	...	...	2	2	2	2	1	1	...	...	...	10
Luitpold–Kreisreals., München	...	...	...	2	4	4	4	4	4	...	...	...	22

[1] Optional. [2] Stenography.

The relative values of subjects are roughly as follows :—

	Gymn.	Reform G.	Real Gymn.	Reform R. G.	Oberreal-schule.
Religion	18	19	19	19	19
German	25	31	29	31	35
Latin	69	51	45	40	...
Greek	36	32	...	...	...
French...	20	31	29	38	47
English	...	...	18	18	24
History	14	16	14	18	15
Geography	12	10	13	10	13
Mathematics	33	35	42	42	48
Natural Science	17	19	28	27	26
Writing	4	4	4	4	7
Drawing	9	8	16	16	18

It will be seen at once that even in the reform gymnasium the position of Latin is quite unique : its value as expressed by the number of hours devoted thereto is 50 per cent. greater than mathematics.

In passing from the humanistic to the scientific side, one sees that the subjects of direct utility—viz., one's mother tongue, French, English, mathematics, natural science, and drawing—are greatly strengthened.

We pass now to the further consideration of other German States.

10. *Kingdom of Bavaria.*—In Bavaria the State concerned itself about secondary schools first in 1548 ("Schuelordnungk de anno, 1548"). Subsequent to this the Jesuit, Benedictine, Dominican, Cistercian, and other monastic orders played an important rôle in the earlier development of Bavarian education, establishing lyceums (Lyzeen) and gymnasia (Gymnasien) throughout the territory. In 1803, a completely new arrangement was brought about by the disappearance of the monastic schools (Klosterschulen) and the creation of an administrative centre and of provincial school councils (Provinzialschulräten). In 1804, a programme for all the palatinate Bavarian middle schools was developed (kurpfalz-bayerischen Mittelschulen); and a little later—viz., in 1808—Niethammer (an Oberschulrät) worked out a "*Normativ*," which was put into operation and gave a fundamentally new form to the higher schools. In 1825, the inspectorates, or district school councils (Kreisschulräte) were abolished, and the Supreme Church and School Council (Oberster Kirchen-und Schulrat) reorganised. In 1829, a celebrated scheme of Thiersch's was introduced, under which the "Gymnasium" and "Lateinschule" acquired their own councils or committees, and four years later the technical schools were established.

Abel, a Minister under Ludwig I, endeavoured, during the decade, 1837-1847, to improve the spirit of the school system, and he brought about the division of the gymnasia into pure Protestant, pure Catholic, and mixed.

A "Ministerium für Kirchen und Schulangelegenheiten" (Ministry for Church and School Affairs) was created in 1847. In 1854, the system was brought more into accord with the Prussian system (under the "revidierte Ordnung der lateinischen Schulen und Gymnasien"). Special features were modified in 1864, 1871, and 1873 ; and the latest reform is as recent as 1890-5, under Minister von Müller (1).

The following programmes are useful to shew the *trend* of modern changes :—

Programmes of the Humanistic Gymnasium of Bavaria for 1874–1891.

Subjects.	Classes and Hours per Week.									
	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	Totals.
Religion	2	2	2	2	2	2	2	1, 2	1. 2	16, 18
German	6, 5	3, 4	3	2	2	2	2	3	3, 4	26, 27
Latin	7, 8	10, 8	10, 8	8	8	8, 7	8, 7	7, 6	7, 6	73, 66
Greek	...	...	...	6	6	6	6	6	6	36
French	...	...	...	...	...	2, 3	2, 3	2	2	8, 10
Arithmetic, Mathematics, Physics.	3	3	3	2	4	4	4, 5	4, 5	4	31, 33
History	...	...	2	2	2	2	2	3	3	16
Geography	2	2	2	2	2, 1	...	...	...	...	10, 1
Natural History	0, 1	0, 1	0, 1	0, 1	0, 1	...	...	...	...	0, 5
Drawing	...	0, 2	0, 2	...	...	...	...	...	...	0, 4
Writing	3, 2	3, 1	2, 1	1, 0	...	...	...	...	...	9, 4
Gymnastics	2	2	2	2	2	2	2	2	2	18
Totals	25	25	26	27	28	28	28, 29	28, 29	28, 29	

[Note.—Where there are *two* numbers the former is for 1874 and the latter for 1891.]

Programmes

[1] The following sources of information as to Bavarian schools may be mentioned, viz. :—
(1) "Sammlung der bayerischen Verordnungen (bis 1838) Döllinger. [Bd. IX.]
(2) "Ueber gelehrte Schulen mit besondere Rücksicht auf Bayern." 3 Bde. Thiersch. 1826–1831.
(3) "Das Gymnasialschulwesen in Bayern zwischen, 1824 und 1843." Roth.
(4) Encyklopädie. (Schmid.) 2 Aufl. Bd. I, 441–452 (Hopf) and 1083–1098 (Schiller).

Programmes of the Realgymnasia of Bavaria for 1874 *and* 1891.

Subjects.	Classes and Hours per Week.						
	IV.	V.	VI.	VII.	VIII.	IX.	Totals.
Religion	2	2	2	2	1, 2	1, 2	10, 12
German	2	2	2	2	2	3, 4	13, 14
Latin	8, 7	8, 7	6	6	6, 5	5	39, 36
French	4	4	3	3	3	3	20
English	...	...	4	3	3	3	13
Arithmetic	3	...	...	...	...	...	3
Mathematics with descrip. Geom. ...	...	5, 4	7, 6	6	6, 5	6, 5	30, 26
Physics	...	...	...	2	2	2	6
Natural History	2	2	...	...	...	...	4
Chemistry and Mineralogy	...	...	...	...	2	3	5
History	2	2	3, 2	3	2, 3	2	14
Geography	2	2	...	...	...	...	4
Drawing	4, 3	4, 3	4	4	4, 3	4, 2	24, 19
Gymnastics	2	2	2	2	2	2	12
TOTALS	31, 29	33, 30	33, 31	33	35, 35	35, 33	...

[NOTE.—Only the last six classes are given, where there are *two* numbers the former is for 1874, and the latter for 1891.]

The optional subjects are Italian, Stenography, Singing, and Instrumental Music, Swimming.

Programmes of the Realschools of Bavaria for 1877 *and* 1894.

Subjects.	Classes and Hours per Week.						
	I.	II.	III.	IV.	V.	VI.	Totals.
Religion	2	2	2	2	2	2	12
German	6	6, 5	4	4	3, 4	3, 4	26, 27
French	6	6	5	5, 4	3	3	30, 29
English	...	...	...	...	5	5	10
Arithmetic	5, 4	4	4, 2	2, 1	1	1	17, 13
Mathematics, with descriptive Geometry.	...	...	0, 3	6, 5	6, 5	6, 5	18
Physics	...	...	...	2, 3	2	2	6, 7
Natural History	0, 2	3, 2	3, 2	...	...	...	6
Chemistry and Mineralogy	...	...	...	...	3	3	6
History	...	...	2	2	2	2	8
Geography	2	2	2	2	1	1	9
Drawing	3, 2	3, 4	4	4	4	4	22
Caligraphy	3, 2	2, 1	2, 0	...	...	...	7, 3
Gymnastics	2	2	2	2	2	2	12
Totals...	29, 28	30, 28	30, 28	31, 29	34	34	...

[NOTE.—Where there are *two* numbers the former is for 1877 and the latter for 1894.]

It may be mentioned that optional subjects are:—Stenography, Singing, Instrumental Music, and Swimming.

11. *The "Absolutorium" of Bavaria.*—The final examination (Absolutorialprüfung) of the Bavarian Secondary Schools qualifies for higher education according to the following scheme :—

(i) The "Absolutorium" of the "humanistic" gymnasia is absolutely necessary for entrance into the University for the study of Theology, Jurisprudence, Medicine, and Classical Philology.

(ii) For all other studies in the University the "Absolutorium" of the Realgymnasium is necessary.

(iii) Both the humanistic and the "Real"gymnasia admit to the Technical High School (Technische Hochschule) and also to the examinations for entrance to preparation for teachers of Mathematics, Modern Languages, Chemistry, Mineralogy, and Natural History; also for the Mother-tongue, History, and Geography in the establishments for technical education, for various places in the official service, for the cadastral and district survey offices, for acceptance in the central institution for instruction in forestry, or for the military service as officer.

(iv) Architects, civil and mechanical engineers pass a four years' course if they come from a "real," and a five years' course if they go through a classical gymnasium.

(v) The reduction of military service to one year follows on the passing through Class VI of the Gymnasium, or the "Absolutorium" of a "Progymnasium" or a "Realschule."

(vi) This last stage admits also the middle post, railway and telegraph service, the admission to the Agricultural "Akademie" of Weihenstephan.

(vii) The Absolutorium of a "Realschule" or the satisfactory attendance of Class V of "Humanistic" or "Real" Gymnasium serves to admit to the Teaching Seminarium, and for preparation for teaching drawing and modelling.

Some minor qualifications need not be referred to. The qualifications for the higher teaching office will be more fully outlined hereafter.

12. *The Kingdom of Saxony.*—Passing over the details of the very early history, it may be mentioned that at the commencement of the last century, there were two principality, and provincial schools (Fürstenschulen und Landesschulen) in Meissen and Grimma, and fifteen city Latin schools (Städtische Lateinschulen, Gymnasien, Lyceen) in Dresden, Leipzig, Chemnitz, Freiberg, Plauen, and other towns.

At this time, the local inspection of school matters was in the hands of a Rector (Rektor) and another official (Rentamtmann), who acted under and subject to an Upper Consistory (Oberkonsistorium). Generally in the towns there was a "Superintendent," and in other places the chief clergyman ("Pastor Primarius"): these together with a Councillor supervised the administration of school affairs. But the administration was very variously organised. For example, as in Leipzig at the present time, there was a special councillor as principal ("Vorsteher") for each school, and in 1826 a "School deputation" ("Schuldeputation") was organised, consisting of the "Vorsteher," two other Councillors, and the "Superintendents" (Superintendenten). Sometimes, but not often, the Rector (Rektor) was included. Zittan had a Scholiarchy ("Scholarchat") consisting of the Burgomaster as Chief Scholiarch, the Syndicus, and the Pastor Primarius.

On 21st January, 1831, it was decreed that the maturity examination (Reifeprüfung) should be introduced throughout Saxony. On 4th September, 1831, a "Ministerium für Kultus und Unterricht" replaced the "Kirchenrat und Oberkonsistorium," and three years later (1834) local directing bodies ("Kreisdirectionen") also replaced the Konsistorial administrative bodies.

On 21st March, 1835, a school commission ("Schulkommission") was organised, and at a conference of rectors at Dresden in the summer of that year, the foundations of a scheme to bring about some sort of unity in the school programmes were laid. On the 27th December, 1846, the several classes of secondary schools were, for the first time, brought into definitive relationship under a scheme of organised curricula, viz., by the "Regulativ für die Gelehrtenschülen"). Eight years later again (1854) a Gymnasium was united with a State Realschool under the same "Direction," in Plauen. This step is one of those which is everywhere likely to tend to reform in the matter of the dead languages.

On the 23rd July, 1860, the Realschools acquired a uniform organisation, and finally under the Law 27th August, 1876, 13 gymnasia, 12 realschools of the first order, 20 realschools of the second order, were brought into a mutual relationship which is substantially that of to-day for all the higher schools of Saxony.

In 1897, Saxony had 8 public royal Gymnasia (Meissen, Grimma, Dresden-Neustadt, Leipzig, Chemnitz, Plauen, Schneeberg, Wurzen; 4 city Gymnasia (städtisch), viz., 2 in Dresden and 2 in Leipzig; and 4 mixed, that is correlated with the royal institutions, viz., Bautzen, Freiberg, Zittau, Zwickau. There are 3 royal Realgymnasia, viz., Annaberg, Döbeln, Zittau; 7 city, viz., Borna, Chemnitz, Dresden (2), Freiberg, Leipzig, Zwickau. The "Real" schools were 23, viz., Leipzig (3), Dresden (2), and 18 more towns had 1 each.

The "*Höhere Mädchenschulen*" (higher girls' schools) of Leipzig and Dresden, are city schools.

Besides these there are private institutions as the Vitzthum Gymnasium of Dresden, which nevertheless receive State subsidy.[1] The receipt of subsidy is of course associated with State rights of inspection, etc.

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[1] The conception of competition between State and private institutions is *toto cœlo* different from the notion of a State control ensuring *efficiency of the teaching staff*, and *a properly organised curriculum*, with a recognition of equality between State and private institutions; both of which are providing education for the people of the State.

13. *The Curricula in Saxony.*—The following will give a sufficient idea of the curricula in Saxony :—

Curriculum Wettiner Gymnasium Dresden.[1]

Subject.	Classes and Hours per Week.										
	VI.	V.	IV.	UIII.	OIII.	UII.	OII.	UI.	OI.	Total.	Real Gym. Total
Religion	3	3	2	2	2	2	2	2	2	20	21
German	4	3	3	2	2	2	3	3	3	25	29
Latin	9	9	8	8	8	8	7	7	8	72	54
Greek	...	...	...	7	7	7	7	7	6	41	None
French	...	...	5	3	2	2	2	2	2	18	34
Hebrew	...	...	...	...	...	...	(2)	(2)	(1½)	(5½)	...
English	...	...	...	...	...	..	(2)	(2)	(2)	(6)	18
Mathematics ...	3	4	3	3	4	4	4	4	4	33	44
Physics, etc. ...	...	...	...	...	...	2	2	2	2	8	15
Natural History ...	2	2	2	1	2	...	...	...	...	9	12
Geography ...	1	2	2	1	...	...	...	...	...	6	14
History	2	2	2	2	2	2	3	3	3	...	16
Drawing	2	2	2	(2)	(2)	(2)	(2)	(2)	(2)	6 + (12)	18–21
Singing	1–2	1–2	1–2	1	1	(1)	(1)	(1)	(1)	5–8 + (4)	12
Gymnastics ...	2	2	2	2	2	2	2	2	2	18	18
Stenography ...	...	...	...	...	(2)	(1)	...	...	...	(3)	3
Totals ... {	29–30	30–31	32–33	32	33	29	32	32	35	...	...
	...	...	...	(34)	(37)	(34)	(39)	(39)	38½	...	...

This curriculum is not identical with those previously given, viz., in sec. 7 of this chapter, for three Dresden gymnasia.

Only the totals of the classes are given for the Real gymnasium.

For the Realschool reference may be made to section 7 of this chapter before referred to.

A further consideration of the education of Saxony, however valuable, is hardly possible within the limitations of this report.[2]

14. *The Kingdom of Württemberg.*—The Reformation considerably diminished in Württemberg the number of monastic schools (Klosterschulen), represented to-day in that kingdom by four "lower evangelical theological seminaries." The equipment for secondary education in the larger towns consists of gymnasia, lyceums, realgymnasia, and reallyceums, and in the smaller country towns of what are known as country Latin schools (Landlateinschulen). In 1895 Württemberg had the following classes of secondary schools, viz. :—

4 Evangelical theological seminaries (Obergymnasien).
14 Humanistic gymnasia, one having a "Real" division, with classes up to the Obersecunda inclusive.
2 Realgymnasia.
3 Humanistic lyceums, viz., institutions with classes up to the Obersecunda inclusive.
4 "Real" lyceums.
66 Latin schools, with from 1 to 6 classes.
1 "Real" Latin school.

The above, making in all 92, are considered learned or grammar schools (Gelehrtenschulen)—that is, they provide higher education.

The kinds of "Real"-schools were as follows :—

5 "Real" schools, with 10 classes (constituting Vorschulen for the Polytechnicum).
9 "Real" institutions, with from 7 to 8 classes (up to the Obersecunda inclusive).
1 Burgher school (in Stuttgart), with 8 classes.
64 "Real"-schools, with from 1 to 6 classes, and for pupils of from 8 to 14 years.

Thus making in all 79 Realschools.

The first five (10-class schools) are really preparatory schools for higher technical education. The "Realgymnasium" of Württemberg is considered one of the higher schools. The "Reallyceum," however, is inferior to the Realygymnasium.

The curriculum in the Karlsgymnasium of Stuttgart will be found in section 7 of this chapter.

The Realgymnasia of Württemberg, as above mentioned, are considered as belonging to the "Gelehrtenanstalten," not to the "Realanstalten." On a humanistic basis they give a wide education in modern languages, natural science, and drawing. They afford the preparatory education for several faculties

[1] From programmes obtained by Commissioner during visit to Saxony.

[2] The following literature will assist any student to make an independent study of Saxon education :—

(*a*) Codex Augusteus. Continuat, III, 1. Gesetzsammlung, Gesetz—und Verordnungsblatt. [Seit, 1835.]
(*b*) Codex des un Königreich Sachsen geltenden Kirchen—und Schulrechts. 2 Aufl. E. Schreyer. Leipzig, 1864.
(*c*) 3 Aufl. P. von. Seydewitz. Leipzig, 1891.
(*d*) Statistisches Jahrbuch der höheren Schulen, Zahlreiche einzelne Schulgeschichten und Schulprogramme Leipziger Rats—und Schulakten. Mushake.
(*e*) Prof. Dr. Otto Kaemmel, Rektor des Nikolaigymnasiums in Leipzig, is also an authority on the school systems of Saxony.

faculties of the University, viz., for history modern languages and literature, for science, political science; also for the technical high school, the military service, or an industrial career. While Greek has no place in the Realgymnasium, Latin has the same aim as in the Gymnasium. The Realgymnasium of Stuttgart was the first in Württemberg, and was originally a "realistic" section of the Eberhard-Ludwig's Gymnasium. In 1872 it was made an independent 10-class institution. In 1878 Ulm had a similar institution, and in 1895, Gmünd. The Gymnasium at Heilbronn has a "realistic" division up to Class OII.

The "Reallyceum" is a sort of combined Latin and Real school.

The following features of change in the Curricula are worthy of note, the change occurred in 1891, 1902 :—

Programmes shewing alteration in curriculum for certain subjects.

Subjects.	Classes and Hours per Week.									
	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.
	Age 8-9.	Age 9-10.	Age 10-11.	Age 11-12.	Age 12-13.	Age 13-14.	Age 14-15.	Age 15-16.	Age 16-17.	Age 17-18.
German	3·8	3·3	2·3	2·2	2·2	2·2	2·2	2·2	2·3	2·3
Latin	12·0	12·10	12·10	12·10	11·10	12·10	8·8	8·8	8·8	8·7
Greek	0·0	0·0	0·0	6·0	6·7	6·7	6·7	6·7	6·6	6·6
Mathematics	4·6	4·4	4·4	3·3	2·3	2·3	3·4	4·4	4·4	3·4
Natural History and Science...	2·2	1·2	0·2	0·2	0·0	0·0	0·2	0·2	2·2	2½·2

The following will, perhaps, be a sufficient indication of the difference between the several curricula. First as to the lower and middle classes :—

In Latin, the programmes of the Realgymnasia and Gymnasia are identical. In the "Real" institutions French takes the place of Latin, and in the place of Greek, from class V onward, English is substituted. In the Reallyceum the "humanistic" element commences with Greek (6 hours per week).

In the upper classes the programme of the "Realanstalten" from Class VIII is identical with that of the "Realgymnasium" with the exception of Latin, in the place of which French and Geography are strengthened in Class VIII, French and Natural History in Class IX, and French, English, and descriptive Geometry, etc.

In the "Realgymnasium" and the "Realanstalten" English is obligatory throughout, and Mathematics, Physics, Chemistry, etc., are more fully treated.

The attitude to the learning of English is characteristic of modern German education.

It may be mentioned that there are very few private secondary schools in Württemberg.

15. *The Grand Duchy of Baden.*—A report upon the higher schools of Baden will be found among the "Special Reports on Educational Subjects" of the Education Department of England. (*See* vol. III, pp. 332-414, 1898. The article is by H. E. D. Hammond, Assistant Master in the Edinburgh Academy. Other sources of information, however, were utilised by the Commissioner.[1]

The following statement is on the authority of Geh. Rat. Dr. Wendt (Oberschulrat und Direktor des Gymnasiums in Karlsruhe). The Middle schools (Mittelschulen) of Baden are of the following kinds, viz. :—

I. Learned or grammar schools (Gelehrtenschulen).
   1. Gymnasia with 9 classes.
   2. Progymnasia with 7 classes.

II. "Real" Middle schools (Realmittelschulen).
   1. Realgymnasia with 9 classes.
   2. Realprogymnasia with 6 classes. A Real progymnasium of 7 classes has followed the Altona system since 1894, *i.e.*, there is no Latin in the lower division.
   3. Higher real schools with 9 classes (Oberrealschulen).
   4. "Real" schools (Realschulen) with 7 classes, mostly related to the Oberrealschulen.
   5. "Real" schools with 6 classes, generally with optional Latin, and finally also with instruction in Greek.
   6. Higher Burgher schools (höhere Bürgerschulen). These are of two kinds, viz.,—
      (*a*) with a "Real" gymnasial plan, with optional Greek, 5 or 4 classes.
      (*b*) with a Realschool plan, with optional Latin, and finally also optional Greek, with 5 or 4 classes.

III. Middle schools for girls. There are several private institutions for the higher education of young women, and the Grand-duchess of Baden takes a deep interest therein, and some of these are under her protectorate or belong to her. A girls' gymnasium (Mädchengymnasium) was opened in the autumn of 1893 by the Association for reform in the education of women. (Frauenbildungsreform).

The

[1] The following sources of information may be of service :—
"Die Mittelschulen in Grossherzogtum Baden," Aug. Joss.
"Die Organisation des höheren Unterrichts in Grossherzogtum Baden."
Geh. Rat. Dr. Gustav Wendt.
"Die Einrichtung und Verwaltung des höheren Schulwesens in den Kulturländern von Europa, etc., Dr. A. Baumeister, München. 1897.

The following programme for the Gymnasia has been in force since 1883, according to Dr. Wendt:—

Curriculum for the Gymnasia in Baden.

Subjects.	Classes and Hours per Week.									
	VI.	V.	IV.	UIII.	OIII.	UII.	OII.	UI.	OI.	Totals.
Religion	2	2	2	2	2	2	2	2	2	18
German	3	3	2	2	2	2	2	3	3	22
Latin	9	9	8	8	8	8	8	7	7	72
Greek	...	...	...	6	6	6	6	6	6	36
French	...	...	4	3	3	3	3	2	2	20
History	...	...	2	2	2	3	3	3	3	18
Geography	2	2	2	1	1	...	...	...	...	8
Arithmetic and Mathematics...	4	4	3	3	3	4	4	4	4	33
Natural Science	2	2	2	2	2	2	2	2	2	18
Philosoph. Propædeutics ...	...	...	...	...	...	...	...	1	1	2
Hebrew (optional)	...	...	...	...	...	(2)	(2)	(2)	(2)	(8)
English (optional)	...	...	...	...	...	(2)	(2)	(2)	(2)	(8)
Caligraphy	2	2	...	...	...	...	...	...	...	4
Drawing	2	2	2	2	2	(2)	(2)	(2)	(2)	10 + 8
Singing	2	2	2	...	...	2	2	2	2	14
Gymnastics	2	2	2	2	2	2	2	2	2	18
Grand Total	30	30	31	33	33	34	34	34	34	293

The above will be found to be identical with the programme given in section 7 of this chapter for Heidelberg, compiled by the Commissioner from "die in dem Schuljahr 1901–2 durchgenommen Lehraufgaben" from the "Jahresbericht," obtained during the Commissioners' visit to Heidelberg.[1]

The following curriculum for the Realgymnasium, which came into force in 1887, is also that of the present time, or, at least, till quite recently. It is given on the authority of Dr. Wendt:—

Curriculum for the Realgymnasia in Baden.

Subjects.	Classes and Hours per Week.									
	VI.	V.	IV.	UIII.	OIII.	UII.	OII.	UI.	OI.	Totals.
Religion	2	2	2	2	2	2	2	2	2	18
German	3	3	2	3	3	3	3	3	3	26
Latin	9	9	8	6	6	5	5	4	4	56
French	...	...	4	4	4	4	4	3	3	26
English	...	...	...	3	3	3	3	3	3	18
Geography	2	2	2	2	2	...	...	...	...	10
History	...	...	2	2	2	2	2	2	2	14
Arithmetic	4	4	3	2	2	3	3	3	3	27
Geometry	...	...	...	2	2	2	2	2	2	12
Descriptive Geometry	...	...	...	...	...	2	2	2	2	8
Physics	...	...	...	...	...	2	2	2	2	8
Chemistry	...	...	...	...	...	...	...	2	2	4
Natural History	2	2	2	2	2	...	...	...	...	10
Writing	2	2	...	...	...	...	...	...	...	4
Drawing	2	2	2	2	2	2	2	2	2	18
Singing	2	2	2	...	...	2	2	2	2	14
Gymnastics	2	2	2	2	2	2	2	2	2	18
	30	30	31	32	32	34	34	34	34	291

[1] The Gymnasium is a finely built and equipped institution facing the Neckar, close to the "Neue Brücke" over it.

The

The programme hereunder for "Oberrealchulen" has been in force since autumn, 1895, according to Dr. Wendt. It is really identical with that of section 7 of this chapter, and is derived from the "Tabellarische Uebersicht der Unterrichtsfächer" of the "Friedrichs Schulhaus"[1] at Karlsruhe, visited by the Commissioners.

Curriculum for the Higher Realschools in Baden.

Subjects.	Classes and Hours per Week.									
	VI.	V.	IV.	UIII.	OIII.	UII.	OII.	UI.	OI.	Totals.
Religion	2	2	2	2	2	2	2	2	2	18
German	6	5	4	4	4	4	4	4	4	39
French	6	6	6	6	5	5	4	4	4	46
English	...	...	...	4	4	4	4	4	4	24
History	...	...	2	2	2	2	3	3	3	17
Geography	2	2	2	2	2	..	...	...	...	10
Natural History	2	2	2	2	2	...	...	...	...	10
And Chemistry (with Mineralogy and Geology).	...	...	...	...	...	2	2	2	2	8
Physics	...	...	...	...	2	2	3	3	3	13
Mathematics	5	5	5	5	5	5	5	5	5	45
Descriptive Geometry	...	...	...	...	...	2	2	2	2	8
Drawing	...	2	2	2	2	2	2	2	2	16
Writing	2	2	2	..	...	...	...	...	...	6
Gymnastics	2	2	2	2	2	2	2	2	2	18
	27	28	29	31	32	32	33	33	33	278

The curriculum for the higher Girls' school (höhere Mädchenschulen) dates from 1892, and is still in force.

Curriculum for the Higher Girls' School in Baden.

Subjects.	Classes and Hours per Week.							
	VII.	).	V.	IV.	III.	II.	I.	Totals.
Religion	2	2	2	2	2	2	2	14
German	6	5	5	6	4	5	5	36
French	6	6	5	5	5	5	4	36
English	...	...	...	...	4	5	5	14
History	...	1	2	2	2	2	2	11
Geography	2	2	2	2	1	1	1	11
Arithmetic, etc.	3	3	3	3	3	2	2	19
Natural Philosophy	1	1	2	2	2	2	2	12
Writing	2	2	1	...	...	...	...	5
Drawing	...	...	2	2	2	2	2	10
Singing	2	2	1	1	1	1	1	9
Gymnastics	2	2	2	2	2	(2)	(2)	10 + (4)
Handwork for Girls	4	4	3	3	3	(2)	(2)	17 + (4)
	30	30	30	30	31	27	26	204 + 8

16. *The Reform Plan of Karlsruhe.*—The Reform movement of Prussia, previously referred to, only expresses a conviction that has been steadily forcing itself on the German people, viz., that an educational system must not force upon children a too early decision as to career. Karlsruhe was as early as Frankfurt engaged

[1] Grossh. Oberrealschule mit Kaufmännischer Fachklasse zu Karlsruhe. Jahresb. 1901-2.

engaged in the consideration of this question, and its Reform Gymnasium and Reform Realgymnasium, with a common basis up to the *Obertertia* inclusive, was the result. The curricula are as shewn in the following table :—

Reform Curriculum, Karlsruhe, 1896, *for Gymnasium and Realgymnasium.*

Subjects.	Classes and Hours per Week.														
	Gym. and Realgym.					Gymnasium.					Realgymnasium.				
	VI.	V.	IV.	UIII.	OIII.	UII.	OII.	UI.	OI.	Total Gym.	UII.	OII.	UI.	OI.	Total Realgym.
Religion	2	2	2	2	2	2	2	2	2	18	2	2	2	2	18
German	6	5	4	3	3	3	3	3	3	33	3	3	3	3	33
French	6	6	6	3	3	2	2	2	2	32	3	3	2	2	34
English	...	...	...	...	...	...	...	...	...	...	6	5	4	4	19
Latin	...	...	...	10	10	8	8	8	8	52	6	5	5	5	41
Greek	...	...	...	...	...	8	8	8	8	32	...	...	...	...	...
History	...	...	2	2	2	2	2	3	3	16	2	2	3	3	16
Geography	2	2	2	2	2	...	...	...	...	10	...	...	...	...	10
Natural History ...	2	2	3	2	2	2	2	2	2	19	2	2	4	4	23
Mathematics ...	5	5	5	4	4	3	3	4	4	37	6	6	5	5	45
Geometry, etc. ...	...	...	...	...	...	...	...	...	...	...	...	2	2	2	6
Drawing	...	2	2	2	2	...	...	...	...	8	2	2	2	2	16
Writing	2	2	1	...	...	...	...	...	..	5	...	...	...	...	5
Gymnastics	2	2	2	2	2	2	2	2	2	18	2	2	2	2	18
Totals	27	28	29	32	32	32	32	34	34	280	34	34	34	34	284

In order to bring clearly before the minds of those interested, a circular was issued pointing out the significance of the Reform scheme. This circular indicated that—

(i) A decision as to career of pupil was unnecessary till he was 13 years of age (since Classes VI–IV were common to the Gymnasium, Realgymnasium, and Realschule).

(ii) Within certain limits, the decision as to career could also be postponed for two years more (viz. up to 15), since Classes VI–OIII were common to both the Gymnasium and Realgymnasium.

(iii) A pupil reaching Classes UIII or OIII has had a training which is something more than a series of useless beginnings ; he has in any case been thoroughly qualifying himself for the lower and middle branches of the public service. [*E.g.* He has been better equipped in his mother tongue and in French, and has done less Latin than if he had been to the ordinary Gymnasium or Realgymnasium.]

(iv) In substituting French for Latin as the first foreign language to be learned, it is believed that the pædagogical order of learning (viz., passing from the easy to the more difficult) is maintained. Further, that it leads to greater identity of the higher education of the sexes.

(v) The teaching of French as a living language is said to (and no doubt it does) sustain the interest of the pupil. This method of acquiring Grammar is more natural, more profitable, and far less tedious than attempting to learn it first from Latin.

(vi) Grammar so acquired is said to render progress in Latin subsequently more easy.

The following comments of Mr. Hammond upon the reform question are worthy of quotation :—

"It would be bold to prophesy concerning the future of the Reformgymnasium. Not even the 'reformers' themselves can tell us what will be its influence upon classical training. Along with other schemes of reform, 'it floats between earth and heaven'—'es schwebt in der Luft,' as Germans poetically express it. It has been the means of demonstrating some weaknesses of the present Higher School system. That is clear. But what of its own ultimate object?

"Its prospectus leaves us in uncertainty. It is an institution upon a 'more modern basis,' and yet desires to compass the ends of the present Gymnasien and Realgymnasien. Does it herald the approach of an 'one school for all,' such as Gesner advocated at the end of the last century? Or are the old classical schoolmen right in regarding it as a thing neither hot nor cold? We must look for an answer to the Frankfort schools after they have run a nine years' course.

"Meanwhile we can learn this from the Reformgymnasium. It is a protest against the inequality of the privileges granted to the various types of Higher School, sanctioned by Government and endorsed by public opinion. For, in the first place, its leaving certificate 'confers the same rights as do those of a Gymnasium and a Realgymnasium'; and, secondly, in the first two years of its existence it has secured a far larger number of entries than the other nine-class schools of Karlsruhe. It points to a time not far distant when 'Abiturienten' of *any* nine-class school will be allowed forthwith to study medicine, law, and even theology, whisper the 'reformers.' And when the time comes it will bring at least one solid advantage even to the 'Gymnasien'—the riddance of a certain number of those who sit upon its benches more for the sake of the outward and material privilege than of the inward grace of the classical training."

Mr.

Mr. Hammond also quotes Dr. Wendt to the following effect:—

"*Classical education can never become really popular. In these days of superficial knowledge there are plenty of people who are ready to condemn the classical schools off-hand*, parents and friends of parents who have not felt themselves quite in their element while at these schools, or whose sons or their schoolfellows meet with a like experience."[1]

17. *The Development of the System of Baden.*—There is a peculiar element in the educational history of Baden worthy of notice. Up till 1830 the effect of the programmes was qualified (so it is alleged) by the fact that the University of Freiberg accepted young people of from 16 to 17 years of age, who had attained to the "Secunda" standard, and gave them a "philosophischer Lehrkurs" of 4 semesters. During this two years they went through an enclyclopædic course in philosophy, logic, algebra, natural history, the history of philosophy, and also geometry, ancient, mediæval, and modern history, physics, anthropology, and practical philosophy.

Later, this special student was required also to attend a Latin college. This wretched system of "cramming" was ended by a ministerial decree in 1837, and attendance at the University was made dependent upon the completion of a nine years' course in one of the grammar schools (Gelehrtenschulen) and the passing of a maturity examination (Reifeprüfung). Attempts were made to reintroduce the system, but, finally, in 1869, a fundamental reform of the programme settled for ever the admission of imperfectly educated lads to the University.[2]

Important reformatory work was also done at the Directors' Conference in 1883.

A pleasing feature of the educational attitude of Baden is the courtesy with which foreign inspection and criticism is received. In an interview with the Director of the Oberrealschule of Heidelberg, the Commissioners had evidence of the extent of the study of educational method and the constant review of the educational theory and practice of other countries.[3]

18. *Contrast between Secondary Education in England and in Baden.*—The following remarks by Mr. H. E. D. Hammond, previously referred to, are worthy of attention. The phrase, "no Baden Gymniast" perhaps overstates the case, but the whole passage conveys an idea of the radical difference between the point of view of those who require general thoroughness, and of those who are satisfied with specialism in the earlier stages of education:—[4]

"All that Baden gains we lose. Whatever their record of individual success, our higher schools are still trammelled by the disadvantage of what, viewed in this aspect, is not unlike a feudal system, while in a province of Imperial Germany, we can look with envy upon the solid progress of an educational democracy. . . . . *Experiments are being carefully watched in Baden day by day, from the trial of improved apparatus for class-rooms to the institution of a Reformgymnasium.* The Oberschulrat would undoubtedly attribute much of the more recent progress of the higher schools mainly to the care with which it has followed experiments, the freedom granted to those who have proposed them, in some cases to the pressure it has employed in order to secure their trial. . . . . In Baden, a boy who wishes to pass his leaving Examination must complete the course of work allotted to every class above that which he enters, and must satisfy his masters in every subject professed by the class. A school class represents a school year. In other words, there is neither terminal promotion nor promotion in single subjects in Baden, *nor is there anything resembling our practice of 'specialising' boys. Here are points upon which a wide difference of opinion would probably be found between our head masters and those of Baden.* The former would, perhaps, claim that they produce results in particular cases with which Baden cannot compete. *They would say, and rightly, that no Baden gymnasiast could win a classical scholarship at Oxford or Cambridge, and would point to boys who have gained as many as six distinctions in the Oxford and Cambridge examinations*, for certificates to prove the advantages of specialisation where a pupil is brilliant enough to specialise, as it were, in several subjects. *The Baden head master might reply that the average English boy leaves school having obtained a superficial knowledge, often acquired only to be forgotten again; that he has received a one-sided mental training, and has neither been stimulated to nor prepared for scientific or original study.* He might assert that the majority of our pupils are sacrificed to the gifted minority in the competition for entrance scholarships at the universities and for similar distinctions, and *he might add that this competition sometimes claims even those who are successful as its victims, since they have been filled too early with much special knowledge, which, in their lack of a broader scientific training, they cannot turn to good account in further studies.* Such a criticism would not be altogether unsupported by the report which the Royal Commission on Secondary Education issued in 1895. Even if we insist that boys are fashioned too much into one intellectual likeness under the Baden system, we must recognise this compensating advantage: *A student enters the Universities of Baden with a fresh field before him. In England the work of school and university overlaps to a serious degree.* A classical scholar of an Oxford College ought to be able to get his "first-class" in Honour Moderations with very little additional effort, and almost any sixth-form boy to *pass* the examination on a minimum of work. This is a fruitful cause of idleness. Moreover, it is true that many schoolboys who enter our universities under no great stimulus to steadily pursue their classical studies have been inspired with no interest for any other branch of study, and are in danger of wasting their time entirely. *Specialisation in our schools is largely resorted to for the purpose of passing special examinations. These examinations are competitive. Many schools are dependent upon the results they achieve*

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[1] The italics are not in the original.

[2] There were two decrees, viz., the "Landesherrliche Verordnung" of 1st October, 1869, and the "Ministerialverordnung" of 2nd October, 1869, the former dealing with the general organisation of the school, the latter with the "Lehrpläne," and leaving examinations, etc.

[3] The Commissioners desire to record their appreciation of the information supplied by the Director of the Oberrealschule, and of his courtesy during their visit to Heidelberg.

[4] "Special Reports," Vol. 3, pp. 380–1.

achieve in them. The inevitable consequence is a system of cramming, a neglect of the duller boy for the sake of the more brilliant, and a training of the latter which, while starving some subjects, introduces him in others to work which would better be left to the university. *Such a method does not seem to look far beyond mere school results. It is diametrically opposed to that followed in Baden.* Here we find that no subject is unduly subordinated to others, but that all are subordinated to objects which they have in common. These are to enable the pupil to express himself with ease and accuracy in his own language, and to develope his powers of observation and of reasoning. In other words, while a due amount of work is required of him, he is provided with a fitting foundation for maturer study. It is in the work of the man that the results of teaching are sought rather than in the work of the boy. *It is this which to no small extent accounts for the difference between German and English scholarship, which is as marked now as when Professor J. B. Mayor emphasised it in his "Guide to the choice of Classical Books." And it may partly explain why Germans so often speak of the average Englishman as devoid of all deeper knowledge."*

This contrast is one which every thoughtful and unprejudiced Englishman is taking into serious consideration in regard to our national system of education.

19. *Grand Duchy of Hesse.*[1]—Secondary education was early represented in Hesse, the Gymnasia of Büdingen, Giessen, and the Ludwig-George Gymnasium of Darmstadt, dating from 1601, 1605, and 1627 respectively. The first was an independent institution only in 1822, and the second remained an annex of the University till 1836, the Director, with the title of "Pädagogiarch," being the Professor of "Eloquenz" therein. Other gymnasia are almost equally ancient. That at Worms, the present form of which does not go back further than 1809, is supposed to date back to 1527. The administrators were variously constituted Darmstadt, Büdingen, and Bensheim were ecclesiastical "Konsistorien;" Worms and Mainz, were under the "Provinzialregierung;" Giessen, under the University authorities (Universitätsbehörde). In 1824, three "Provinzialpädagogkommissionen" were constituted under the Ministry of the Interior, for the better management of school affairs, and fifty years later, viz., in 1874, all school matters were placed under a section of the Ministry of the Interior and Justice (Abteilung für Schulangelegenheiten des Ministeriums des Innern und der Justiz).

The majority of the "Grammar" schools are State schools, and all are under the State jurisdiction.

Up to 1877 there was no general curriculum obligatory with all schools, but in that year the first official plan appeared, and shortly afterwards those for the Realgymnasia and Realschools also.

The curricula have been referred to in section 7 of this chapter, but are more fully given here.

Curriculum for the Gymnasia of Hesse since 1903.

Subjects.	Classes and Hours per Week.									
	VI.	V.	IV.	UIII.	OIII.	UII.	OII.	UI.	OI.	Totals.
Religion	2	2	2	2	2	2	2	2	2	18
German	4	4	3	2	2	3	3	3	3	27
Latin	9	9	8	7	7	7	7	7	7	68
Greek	...	...	...	6	6	6	6	6	6	36
French	...	...	5	3	3	3	3	3	3	23
History	...	...	2	} 3	3	3	3	3	3	} 27
Geography	2	3	2							
Mathematics	3	4	4	4	4	4	4	4	4	35
Natural Science	2	2	2	2	2	2	2	2	2	18
Drawing	2	2	2	1	1			($1\frac{1}{2}$)		8 + ($1\frac{1}{2}$)
Writing	3	2	...	...	...	...	...	...	...	5
English	...	...	...	...	...	...	...	(2)	(2)	(4)
Hebrew	...	...	...	...	...	...	...	(2)	(2)	(4)
Singing	2	2	2	2	2	2	2	2	2	18
Gymnastics	2	2	2	2	2	2	2	2	2	18
Totals	31	32	32	34	34	34	34	34	34	301

The above curriculum is identical with that of the splendid Grand-ducal Ostergymnasium of Mayence[2] visited by the Commissioners.

The

[1] The Grand Duchy of (Hesse Grossherzogtum Hessen) has three provinces, viz., "Oberhessen," Starkenburg," and "Rheinhessen."

[2] See the Jahresbericht des Grossherzogl. Ostergymnasuim zu Mainz für das Schuljahr Ostern 1901, bis Ostern, 1902.

The curriculum for the Realgymnasium is as follows :—

Curriculum for the Realgymnasium of Hesse since 1893.

Subjects.	Classes and hours per Week.									
	VI.	V.	IV.	UIII.	OIII.	UII.	OII.	UI.	OI.	Totals.
Religion	2	2	2	2	2	2	2	2	2	18
German	6	5	4	3	3	3	3	3	3	33
Latin	8	8	7	6	6	5	5	5	5	55
French	...	...	5	5	5	4	4	4	4	31
English	...	...	...	3	3	3	3	3	3	18
History	...	...	2	2	2	2	2	2	2	14
Geography	2	2	2	2	2	1	1	1	1	15
Arithmetic	5	4	3	3	...	...	...	...	...	14
Geometry and Algebra ...	...	...	2	2	5	5	5	5	5	29
Natural History	2	2	2	2	2	2	...	...	...	12
Chemistry	...	...	...	...	...	...	2	2	2	6
Physics...	...	...	...	...	...	3	3	3	3	12
Writing	2	2	...	...	...	...	...	...	...	4
Drawing	...	2	2	2	2	2	2	2	2	18
Singing...	1	1	1	1	1	1	1	1	1	9
Gymnastics	2	2	2	2	2	2	2	2	2	18
Totals	30	30	34	35	35	35	35	35	35	306

The above is identical with the programme of the Grand-ducal Realgymnasium in Mayence visited by the Commissioners[1].

The Curriculum for the Oberrealschulen in the same building is as follows :—

Curriculum for the Higher Realschools[2] *of Hesse*, 1901–2.

Subjects.	Classes and Hours per Week.									
	VI.	V.	IV.	UIII.	OIII.	UII.	OII.	UI.	OI.	Totals.
Religion	2	2	2	2	2	2	2	2	2	18
German	10	6	5	3	3	4	4	4	4	43
French	...	7	7	6	5	5	4	4	4	42
English	...	...	...	5	4	3	3	4	4	23
History	...	...	2	2	2	2	2	3	3	13
Geography	2	3	2	2	2	2	2			18
Arithmetic	6	5	6	6	6	5	6	5	5	50
Geometry and Algebra ...	...	...								
Natural History	2	2	2	2	2	...	...	...	...	10
Chemistry and Mineralogy ...	...	...	...	...	...	3	3	3	3	12
Physics	...	...	...	...	2	2	3	3	3	13
Writing	3	2	2	...	...	...	...	...	...	7
Drawing Freehand	2	2	2	2	2	2	2	2	2	18
Geometrical Drawing	...	...	...	...	...	1	1	2	2	6
Gymnastics	2	2	2	2	2	2	2	2	2	18
Singing	1	1	1	1	1	1	1	1	1	9
Totals	30	32	33	33	33	34	35	35	35	300

The

[1] See the "Tabellarische Uebersicht der Unterrichtsstunden nach Klassen" in the "Programm des Grossherzoglichen Realgymnasiums, der Realschule und der Höheren Handelschule zu Mainz. für das Schuljahr, 1901–2."

[2] Oberrealschulen.

The lower 6-class Realschools have a somewhat different programme, which is as follows:—

Curriculum for the 6-class Realschools of Hesse since 1884.

Subjects.	Classes and Hours per Week.						
	VI.	V.	IV.	III.	II.	I.	Total.
Religion	2	2	2	2	2	2	12
German	6	5	5	4	4	4	28
French	6	6	5	5	4	4	30
English	...	...	3	3	3	3	12
History	2	2	2	2	2	2	12
Geography	2	2	2	2	2	2	12
Arithmetic	4	4	4	1	...	...	13
Gen. Ar. and Algebra	...	...	...	} 5	6	6	} 21
Geometry	...	2	2				
Natural History	2	2	2	2	...	...	8
Physics	...	...	...	2	2	2	6
Chemistry and Mineralogy	...	...	...	...	3	3	6
Freehand Drawing	2	2	2	2	2	2	12
Geometrical Drawing	...	...	...	...	1	1	2
Writing	3	2	1	...	...	...	6
Gymnastics	2	2	2	2	2	2	12
Singing	1	1	1	1	1	1	6
Totals	32	32	33	33	34	34	198

The Higher Secondary Schools of Hesse seen by the Commissioners were excellently equipped for scientific and general teaching, and the buildings and internal arrangements very fine.

20. *Other Parts of Germany.*—The Gymnasia and higher schools of other parts of Germany shew special features, and are worthy of study in connection with the systems of that Empire. In Mecklenburg-Strelitz the Gymnasium of Friedland has existed since 1429; in Mecklenburg-Schwerin the Gymnasia of Wiemar, Güstrow, and Parchim have existed since 1541, 1553, and 1564 respectively. In the smaller States of Northern and Middle Germany, also, there are very ancient Gymnasia, *e.g.*, Brunswick (Braunschweig), 1415; Wolfenbüttel, 1569; Hamburg, 1529; Bremen, 1584; Lübeck, 1531; Lemgo, 1583; Gera, 1608; Corbach, 1578; Gotha, 1524; Eutin, 1566.

Again, in Alsace–Lorraine (Elsass-Lothringen) the Gymnasia are ancient and celebrated. The Protestant Gymnasium of Strasburg was founded in 1538 under the Rektor Johann Sturm. Its programme is given in section 7 of this chapter. So also are the other two Gymnasia seen by the Commissioners in Strasburg, namely, Episcopal Gymnasium (Bischöfliches Gymnasium an St. Stephan zu Strassburg in Elsass) and the Strassburg Lyceum.

The organisation of secondary education in every part of Germany has exhibited various features which are worthy of study, and in modern reform the total experience of these has to some extent been in the mind of the reformers.

A point worthy of remark is that the existence of a large number of intellectual centres within an area which must be regarded as very limited, has not been without great influence in provoking a healthy emulation, under which experience has rapidly accumulated.

The teachers of German Secondary Schools have been highly educated men, and the school equipments are such that they have every facility for teaching well.

In the next Chapter the education of the teacher will be discussed.

CHAPTER XX.

Classification, Organisation, and Curricula of Secondary Schools in Germany.

[J. W. TURNER.]

Classification.—The excellence of the German system of secondary education is unquestionable. Without exception, every town has a properly organised secondary school, and in every large city one is made familiar with different classes of secondary schools, viz. :—

1. Gymnasium.
2. Realgymnasium.
3. Oberrealschule.
4. Realschule.

The Gymnasium is a classical secondary school. Its curriculum includes Greek and Latin, and its course extends through nine years.

The Realgymnasium, which also has a course of nine years, excludes Greek for English, and gives prominence to French and science.

The Oberrealschule, with a nine years' course, excludes both Greek and Latin, and in their place substitutes modern languages.

The Realschule excludes both Greek and Latin, and its course lasts only six years The Oberrealschule and the Realschule may be designated the modern secondary schools of Germany. The Realschule coincides in point of school-age with the upper primary school of France and the higher grade schools of Great Britain.

In many towns a Vorschule, or preparatory school, is attached to the secondary school. The Vorschule is attended by pupils between the ages of 6 and 9, and on the completion of the three years' elementary course they are promoted to the Gymnasium or Realschule.

Material, Organisation.

In all parts of Germany which came under notice, the buildings devoted to secondary school purposes are, with very few exceptions, magnificent structures. The site, as a rule, is well chosen; the architecture is usually bold and broad in character; the walls, generally of stone, are substantial; the buildings stand well back in nicely kept grounds, well shaded with deciduous trees; and the internal arrangements are on the most approved principles.

Goethe Gymnasium.—Among the very finest and most modern of these buildings is the Goethe Gymnasium, Frankfurt on the Main. The construction of this noble pile, which cost £28,000, is due to the efforts of the Frankfurt City Council, the City Building Committee, and the City Health Officer. The school, which stands in large grounds, is well situated in the centre of a rapidly-growing suburb, away from the bustle and din of the business centre, and yet within easy reach of the older inhabited parts of the town. The school buildings occupy three floors, and entrance is gained through a front hall into a magnificent vestibule, 30 feet x 54 feet, supported by eight strong columns of best selected sandstone. Opening out from the vestibule are the rooms of the Director, the teachers, and the caretaker. (Every school in Germany has its caretaker, who resides on the premises.) A corridor about 10 feet wide leads from the vestibule, and gives access to five classrooms. These classrooms, which are constructed to hold forty pupils each, have a north-west aspect. At the extreme end of this corridor the lavatories and latrines are situated.

On the first floor are situated the physics classroom, and a physics and a chemical workroom, facing south-east, the natural science classroom and museum facing north-west, the library facing south-west, and, at the end of a corridor, five more classrooms with a north-west outlook.

On the second, or top, floor is situated the general assembly hall, 52 feet by 42 feet. A corridor which leads from the hall gives access to five classrooms and the drawing classroom.

The heating of the school buildings is done by a low-pressure steam heating system, which is connected with a Pulsion air-heating system driven by electric power.

The floors in the classrooms are of oak-wood, and the corridors are flagged, thus ensuring the greatest cleanliness. Wood panelling has been avoided for hygienic reasons, and "stucco lustro," made of cement and lime, has been used instead.

The framework of the classroom doors is made of iron, and the doors, when opened, swing into ches in the walls.

The windows extend from just below the ceiling to a height of about 4½ feet from the floor, and each classroom has nearly 200 feet of lighting space.

Each desk is so constructed that the pupil can sit down or stand up to his work. This desk has been introduced by the Director of the school, Dr. K. Reinhardt.

The blackboards are fixed in the middle of the wall, and are on the double sliding principle.

The book-presses are built into niches in the wall, in order to save space.

The gymnastic hall is 70 feet by 36 feet. Its floor is of oak.

The

The architect avoided any richness of form on the building, intending to gain effect by its dimensions alone, and to express the purpose of the rooms by proper grouping of the windows and development of the façade. The few ornamentations are concentrated upon the gable side towards Bahnstrasse (first picture), and here the designer adopted the Early Renaissance style.

Just above the main entrance the motto of the school—"Non scholae sed vitae discimus"—is inscribed; higher up the fine expression "Per aspera ad astra" has found place. High up, far discernible, the name of the school, in true remembrance of Frankfurt's great son, is affixed.

German Secondary Schools—General Equipment.—A striking feature in all the Secondary Schools of Germany, apart from the excellence of the buildings and the well-arranged class-rooms, which has already been referred to, is the splendid provision which has been made for teaching purposes. It matters little what town is visited to illustrate the truth of this statement. Every school has its laboratories, museums of natural history, library, general assembly room, and hall for gymnastics. The furniture is of modern type, and the walls of the class-rooms and corridors are adorned with beautiful pictures. Some details of places visited are furnished.

Heidelberg.—In the Heidelberg Oberrealschule the physics laboratory is well equipped for elementary teaching, and much attention is given to practical work in the laboratory for chemistry.

The school contains a splendid cabinet of products, in which specimens of the raw and manufactured article show the different stages of development. The chief timbers of foreign countries are well represented. An articulated human skeleton forms part of the equipment of almost every secondary school in Germany.

The school is enriched with many beautiful photographs and pictures. The long corridors and the walls of the class-room are hung with views of local scenery (among the most charming in the country), varied with scenes of ancient Rome and other places. The director selects a certain number of the pictures to be studied each week by the pupils, and he takes a special pride in explaining the subjects for study, and in inculcating a taste for art.

Frankfurt.—The people of Frankfurt rival those of Paris in the generous provision they have made for the education of their children.

The Goethe gymnasium is fitted up with a physics and chemical laboratory, with electrical apparatus, on each side of a nicely-furnished lecture theatre, beautifully arranged.

Physical culture in the German secondary schools is a regular subject in the curriculum, and while open-air games are encouraged to a moderate extent, the physical training of the German boy is principally carried on in the gymnastic hall. This building is, as a rule, detached from the main structure. It is generally spacious, well furnished with all the apparatus used in the best appointed halls, and supervised by an instructor who is thoroughly conversant with his work. The system of training was seen in both boys' and girls' schools with the best results.

The Musterschule, a realgymnasium, in Frankfurt, an imposing solid structure, has a fine gymnastic hall. The floor is covered with thick linoleum, a substance which has been selected in preference to cork, which is commonly used for the floors of the Swiss gymnastic halls. Appropriate mottoes are seen on the walls, and in place of the silver or gold medal with which we are familiar, victors in the athletic competitions receive a laurel wreath with their names inscribed.

The Musterschule has a science equipment of a very superior character. The lecture room is well placed with regard to the laboratories, and the entire arrangements for the teaching of science are well organised.

The walls of the class-rooms and corridors (the latter are 150 feet long x 21 feet wide) are decorated with portraits of Germany's great men—emperors, poets, statesmen, etc.,—prints of the great Italian masters, and photographs of European scenery.

Bonn.—Physical training of girls came under observation in Bonn. A class of eighty seniors, between the age of 16 and 18, went through their usual exercises under a male instructor with great thoroughness. Judging from the enthusiasm and *vim* accompanying the instruction, one concludes that the subject, among both boys and girls, is extremely popular in the schools. The particular drill seen has no features or apparatus new to us, but the splendidly lighted hall, the methodical teaching of the subject, and the attention and smartness of the pupils, are to be commended. There can be no question as to its physiological value to these girls and others receiving similar instruction.

Cologne.—In the Oberrealschule the provision for the teaching of science is very fine. The lecture room is very conveniently situated between the physics and chemical laboratories. The furniture and school appliances are of modern construction. Some very fine pictures and statuettes symbolising art, labour, etc., beautify the walls of the school. The museum is richly furnished with cabinets of commercial products, and specimens of natural history. The entomological specimens form a splendid collection, and the school is liberally supplied with physiological and botanical examples, concrete and pictorial.

Berlin.—The Augusta Seminary is a training college for girls in the morning and a gymnasium for girls in the afternoon. Candidates for training are not admitted until they have attended ten years in the day schools, and the training course extends over three years. On the completion of the training, a diploma to teach in elementary and primary schools, and also in the lower classes of secondary schools, is granted, but for the higher positions in the latter schools, it is further necessary to qualify by a two years' course at a university.

The gymnasium is open from 3 o'clock to 7 o'clock daily, and the curriculum embraces Latin, Greek, mathematics. The same rector has charge of the two institutions, and the work is distinct in each. The buildings and the material organisation are up to the standard of the German secondary schools.

Playgrounds.—The surface of the playgrounds of Germany is generally covered with small loose gravel, which is kept well watered. Asphalted grounds were not seen. Shade trees are provided in most of the playgrounds, and many of the schools are lit with electricity, which is supplied from the city source.

SYNOPSIS OF TIME-TABLE OF THE GOETHE GYMNASIUM, FRANKFURT.

Subjects.	Total No. hours.	VI.	V.	IV.	III 2a.	III 2b.	III 1a.	III 1b.	II 2a.	II 2b.	II 1a.	II 1b.	I 2a.	I 2b.	I 1.
Religion— Evangelical	29	3	2	2	2	2	2	2	2	2	2	2	2	2	2
Catholic	7	+ 1	2			2						2			
German	46	5	4	4	3	3	3	3	3	3	3	3	3	3	3
Latin	95	...	...	...	10	10	10	10	8	8	8	8	8	8	7
Greek	56	...	...	...	...	...	...	...	8	8	8	8	8	8	8
French	42	6	6	6	3	3	2	2	2	2	2	2	2	2	2
History and Geography	39	2	2	6	3	3	4	4	2	2	2	2	2	2	3
Mathematics	52	5	5	5	4	4	4	4	3	3	3	3	3	3	3
Physiography	15	2	2	3	2	2	2	2	...	...	...	...	...	...	...
Physics	14	...	...	...	...	...	...	...	2	2	2	2	2	2	2
Writing	5	2	2			1			...	...	...	...	...	...	...
Drawing	12	...	2	2	2	2	2	2	...	...	...	...	...	...	...
Total	412	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Gymnastics	42	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Singing	7	2	2	1 Sing. 1 Chor.			...	...	...	...	...	...	1 Sing. 1 (Chor)		
English (optional)	13	...	...	...	...	...	...	...	...	...	2	2	3	3	3
Hebrew (optional)	8	...	...	...	...	...	...	...	...	...	2		3		3
Drawing (optional)	4	...	...	...	...	...	...	...	2				2		
Total	74	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Translation of Extracts from the Programme of the Goethe-Gymnasium in Frankfurt-on-the-Main.

3. *Synopsis of the Educational Work accomplished during the past School year* 1901–1902.

OBERPRIMA.

German.—Goethe's development according to Dichtung und Wahrheit, in connection with the Strasburg period: Herder; the essay on Shakespeare was read and explained. A considerable number of Goethe's poems were treated in detail and committed to memory, especially Prometheus, Grenzen der Menschheit, das Göttliche, Mahomets Gesang, Gesang der Geister. The early dramas were discussed; Iphigenie and Tasso were entered into fully.

Survey of Schiller's development; in connection therewith discussion of the early dramas. The letters on the Aesthetic Education of Man were read and explained. Schiller's Gedankenlyrik, especially Ideal und Leben. Goethe and Schiller's friendship.

The following literary works were also studied:—Shakespeare's Hamlet (in connection with Herder's Essay), by Grillparzer: Sappho and Medea, by Heinrich von Kleist: Prinz von Homburg, in conclusion: Goethe's Faust. Off-hand speeches by the scholars on subjects chosen by themselves.

Latin.—Tacitus: Germania and Annals XI–XV (Selections). Cicero: Somnium Scipionis and selected sections from the rhetorical and philosophical works, according to the Chrestomathy of Lüders-Weissenfels. Horace: Carmen saeculare. Selection from the Odes of Books III and IV, and from the Satires and Epistles.

Repetition of the Latin Syntax by Reinhardt, in particular § 251 to § 277; and, in connection therewith, tuition in diction. Oral translation exercises from the Exercise book by Ostermann-Müller, Part V. Every fortnight a paper done in class; time allowed, 2 hours; besides, a certain amount of home-work.

Greek.—Plato, Protagoras (the whole). Thucydides, II, 1–78; III, 20–24; 52, 68, 72; IV, 2–41. Plato, Gorgias (the whole). Euripides, Tauric Iphigenia. Selection from Greek lyric poets. Written translations (also into Greek).

Homer, Iliad, XII, XV, XVI, XVIII, XIX, XXI, XXII, XXIV.

Sophocles, Antigone.

French.—Voltaire, Zaïre, the last acts. A. de Musset, Proverbes; Molière, Le Misanthrope; Daudet, Bornier, Theuriet, Maupassant, Arène, Choix de Nouvelles Modernes (I). Boissier, Cicéron et ses Amis. In connection with the reading, conversational exercises and explanations in regard to metrics, history of the language and literature. Every three or four weeks work done in writing. Besides, occasionally, repetition of grammar.

English.—Macaulay, England Before the Restoration; Sheridan, The School for Scandal; Shakespeare, Macbeth.

Hebrew.—Second part of the Accidence and selected chapters of the Syntax, according to Seffer (9th edition), with the Exercises and Reading Lessons. Written exercises.

History.—European history from 1648 to the foundation of the German Empire.

Mathematics.—The notion of co-ordinates, and the fundamental principles of conic sections. Binomial theorem, together with examples of its application. Spherical trigonometry: some parts. Recapitulation of the curriculum of the preceding classes, by means of exercises.

UNTERPRIMA.

UNTERPRIMA.

German.—

Division A: Review of the development of literature as far as Klopstock. Selection from Klopstock's Odes. Lessing's life and works: Philotas, Miss Sara Sampson, Minna von Barnhelm, Litteraturbriefe (in particular the 17th). Laokoon, Selection from the Hamburgische Dramaturgie, Emilia Galotti, Nathan.—Schiller's Spaziergang, Klage der Ceres, Eleus. Fest.—Shakespeare's Julius Cæsar, Macbeth, Coriolanus, Richard II.—Schiller's Abfall der Niederlande (partly, private reading). Lectures (Lives and works of the chief representatives of the Renaissance, as well as of several modern artists).

Division B: Lessing's life and works. Philotas, Minna von Barnhelm (in connection therewith, review of the development of German comedy: Kleist's "Zerbrochener Krug," Kotzebue's "Kleinstädter," Grillparzer's "Weh dem, der lügt," Freytag's "Journalisten"), Emilia Galotti, Nathan. Selection from Laokoon (besides Schiller's Spaziergang), and from the Hamburgische Dramaturgie (17th Litt.-Brief). Wie die Alten den Tod gebildet (Schiller's Götter Griechenlands).—Shakespeare's Othello, Coriolanus.—Klopstock's Odes. Review of history of literature: 1. The Ballad. 2. Luther (Sendbrief vom Dolmetschen. An die Ratsherrn. Von weltlicher Obrigkeit). 3. Hutten and the movement of the Renaissance represented by the Humanists. 4. Hans Sachs (besides, Goethe's Hans Sachsen's poetische Sendung, Künstler's Erdenwallen and Apotheose). 5. The 17th century (Opitz, Gryphius) in review and lectures by the scholars.—Discourses and recitations.—Private reading: Alpharts Tod. Lessing's "Der junge Gelehrte," Hutten's "Gespräch über die Anschauenden."

Latin.—

Division A—Tacitus: Annals I, 1–52, 55–89; II, 5–26, 44–46, 63–64, 72–73, 88; Cicero pro Murena; Selection from the Odes of Horace. Repetition and extension of grammar; on an average once every week work done in class or at home; oral translation exercises during the summer, from Ostermann-Müller.

Division B—Tacitus: Annals I (whole), II (Selections); Cicero pro Roscio Am; selected sections from the Chrestomathia Ciceroniana by Lüders-Weissenfels. Horace: Selections from Odes I–III. Grammatical Repetitions; on an average once every week work done in class or at home; oral translation exercises during the summer, from Warschauer; during the winter, from Ostermann-Müller.

Greek.—

1. Reading—

Division A: Herodotus VIII 40–69; 74–76; 78–95; 108–110; 140–144. Aeschylus, Persians 249–526. Thucydides III 82 and 83; VI 12, 2; 13, 1; 15–18. Plato, Crito, and Apology. Homer, Odyssey XVII 1–30; 182–285; 290–368; 411–424; 445–480. XVIII 304–345. XXI 1–14; 42–434. XXII 1–99; 297–445; 478–501. XXIII 1–240; 289–296. XIX 53–394; 467–475. Besides, XI 1–224; 387–640, for private reading. Iliad I 1–430; 488–611. II 1–52; 87–282; 381–420; 442–483. XI 56–574. Plato, Euthyphro. Euripides, Heracles.

Division B: Plato, Apology, Crito. Homer, Odyssey: XVII, XVIII, XXI, XXII and XXIII. Iliad: I, II, XI, XII, XV, 593 to the end. Sophocles, Antigone. Suitable passages were committed to memory.

2. Grammar: Repetition from the Accidence. The Syntax by Reinhardt was studied completely. Every fortnight written translations from German into Greek, home work.

3. Work done in class; as a rule, weekly, including translations from Greek into German done at times.

French.—

Reading—

Division A: Lanfrey, Campagne de 1806. Voltaire, Mérope: Racine, Athalie.

Division B: Molière, les Femmes savantes. Scribe, le Diplomate. Mirabeau, Selected Addresses. Musset, Il faut qu'une porte soit ouverte ou fermée und On ne saurait penser à tout. Selected narratives (Renger). Conversational exercises in connection with the reading. Grammatical repetitions. Discussions on French verse, history of the language and literature. Every three weeks work done in writing.

English.—

Reading—

Division A: Marryat, The Children of the New Forest.

Division B: Dickens, David Copperfield's School-Days. Grammar, according to Tendering, kurzgefasstes Lehrbuch der engl. Sprache: Phonetics, Accidence and principal rules of Syntax. Conversational exercises in connection with the reading lessons in the compendium and the authors read.

Hebrew.—Accidence according to Seffer's Elementarbuch (9th edition) as far as the Weak Verb. All the exercises were translated or analysed.

History.—European history from Augustus to the Thirty Years' War.

Mathematics.—Trigonometry and Stereometry, concluded. Binomial Theorem (for positive integral powers), together with examples of its application. Elements of the Calculus of Probabilities, together with its application to bets and games. Application of Algebra to Geometry, especially problems of division and transformation. Constructions by means of a similar auxiliary figure. Solutions according to different methods. Notion of co-ordinates; graphic representation; fundamental principles of conic sections commenced.

Physics.—Electrology, concluded; Acoustics; Mechanics.

OBERSEKUNDA.

German.—

Division A—Reading: Nibelungenlied (partly in Middle High German, partly in the translation); selected poems of W. v. d. Vogelweide. Waltharilied. Goethe's Hermann und Dorothea. Egmont. Scheffel's Trompeter von Säkkingen. Brief review of the development of the German language and literature as far as 1300. Epitome of the Middle High German grammar. Lectures and recitations. Private reading: Reineke Fuchs. Der arme Heinrich. Meier Helmbrecht. Gudrunlied (Selections). Freytag's Ahnen (I–III) and Scheffel's Ekkehard.

Division B—Review of the development of the Middle High German literature. Reading of the Nibelungenlied (according to the selection made in the Text-book for II[1], by Hopf und Pauls). Information on the history of the language. Goethe's Egmont; Schiller's Wallenstein. Some passages committed to memory. Off-hand speeches.

Latin.—

Division A—Reading: Livy, Books XXI and XXII. Cicero, pro Milone. Virgil, Æneid, Books I and II, according to the selection by Lange. Grammar: Repetition of Accidence and Syntax. Written and oral translations according to Warschauer's Exercise book. Every week work done in class; in addition, every fortnight work done at home.

Division B—Livy, XXI and XXII. Cicero, de imperio Pompei and pro Ligario; in other respects, as Division A.

Greek.—

Division A—Reading: Xenophon, Anabasis I, 3–8, II–IV. Hellenica, II–IV (according to the selection of Bünger). Occasionally written translations from Hellenica, done in class. Homer, Odyssey, I 1–79, V 28–493. VI. VII 1–55; 75–183; 228–230; 335–347. VIII 1–21; 24–86; 532–586. IX. Suitable passages were committed to memory. Homeric prosody and accidence, according to Römer's Epitome. Grammar: Repetition of the Accidence and the most important rules of Syntax (more in detail, §§ 76–134), according to the Grammar by Reinhardt-Römer. Oral and written translations from German into Greek. Every week work done in class; besides, every fortnight work done at home.

Division B—Reading: Xenophon, Anabasis, Book I 1, 2 1-21, 3, 4 6-19, 5, 6, 7 1-13, 8–10. II 1 2-23, 2 1-5, 7-12, 18-21, 3, 5, 6. III 1 2-25, 32-47, 2 7-39, 4 24-49, 5 7-18. IV 1 2-28, 2 1-9, 3 8-23, 4 7-18, 5, 6, 7 19-27, 8 1-7, 22-28. V 5–8. Occasionally written translations (Scholastica) from the prose writer. Homer, Odyssey I 1–79. V 19–493. VI. VII 1–55, 75–183, 228–230, 335–347. VIII 1–86, 93–265, 370–586. IX 1–38. XIII 1–310, 344–410, 429–438. Suitable passages were committed to memory. Grammar as in Division A. Weekly work done in writing.

French.—

Division A—Reading: Scribe et Legouvé, Les Doigts de Fée. Lanfrey, Campagne de 1806. Racine, Phèdre. Conversational exercises in connection with the reading. French prosody discussed. Written work every three weeks on an average.

Division B—Reading: Bonaparte en Egypte, finished. Molière, le Malade imaginaire. Selected Narratives by Daudet. Racine, Britannicus. Conversational Exercises in connection with the reading. Grammatical repetitions. Discussion of French prosody. Every three weeks written work.

English.—Tendering, kurzgefasstes Lehrbuch der englischen Sprache. Phonetics, Accidence and principal rules of Syntax. Material for reading from the text-book; conversational exercises in connection with the same. Poems committed to memory.

Hebrew.—The regular Accidence, according to Seffer (9th edition, §§ 1–41); all the exercises and reading lessons were read and translated.

History.—History of Antiquity as far as the year 31 B.C.

Mathematics.—Progression: arithmetical and geometrical. Compound interest and annuities: application; Trigonometry and Stereometry, continued.

Physics.—Heat, Magnetism, Electricity.

UNTERSEKUNDA.

German.—

Division A: A few more difficult poems of Schiller (Glocke, Klage der Ceres, Kassandra, Siegesfest); Maria Stuart. Poetry of the Wars of Independence. Goethe's Hermann und Dorothea. A few poems were committed to memory, previously learnt poems repeated. Exercises in composition; off-hand speeches. Private reading: Kleist, Michael Kohlhaas.

Division B: Goethe's Götz von Berlichingen; Schiller's Maria Stuart und Jungfrau von Orleans; more difficult poems of Schiller, as in Division A; Poetry of the Wars of Independence. Poems committed to memory, and previously learnt poems repeated. Exercises in composition. Off-hand speeches.

Latin.—

Reading—

Division A: Selected sections from Ovid's Metamorphoses, especially Book I. Sallustius: bellum Jugurthinum. Cicero: In Catil. I and III. Some sections from Ovid were committed to memory.

Division B: Sallustius bellum Jugurthinum; Cæsar bellum Gallicum VII; Ovid's Metamorph. II 1–327; V 339–571; IX 152–272; XV 871–879. Cicero in Catilinam II. Suitable passages from the poet were committed to memory. Grammar: Latin Syntax, by Reinhardt §§ 108–145; 169–174; 177; 181; 185 and 186; 187–213. The corresponding Sections from the Exercise book by Ostermann-Müller (Part IV) were translated, partly orally and partly in writing. Repetition of the whole Accidence. Work done in class weekly; in addition, a certain amount of home work.

Greek

Greek.—The Accidence of the Attic dialect, verba anomala (selected). (The Grammar by Reinhardt-Roemer was followed). Selected principal rules of Syntax, inductively derived in connection with reading material. Reading according to the Reading Book by Herwig; all the pieces from 1–75 were gone through. The German exercises were all translated, partly orally and partly in writing. Every week written home work was done, as well as work in class. The reading of Xenophon's Anabasis was commenced. Preparation in class; retranslation at time of repetition.

French.—

Reading—

Division A: Lafontaine, Choix de fables, read and partly committed to memory. Molière, l'Avare. Thiers, Expédition de Bonaparte en Egypte, read and partly committed to memory.

Division B: Lafontaine, Choix de fables, selections read, and partly committed to memory. Molière, l'Avare. Daudet, Narratives from Lettres de mon moulin und Contes du lundi. Contents stated in French, and conversations on what had been read. Grammar: Banner, Syntax, § 109 to the end; the most important rules were gone through, and the corresponding pieces of the material for translation were translated; the most important parts of previous courses were repeated. Translations done at home, and every fortnight written work done in class, in connection with the Grammar or the Reading, at times dictation or off-hand retelling.

History and Geography.—German history from 1740–1888; repetition of the historical and geographical courses. Brief repetition of ancient history.

Mathematics.—(*a*) Arithmetic: exercises in logarithms; quadratic equations and such equations of a higher degree which can easily be reduced to quadratic equations; quadratic equations with two unknown quantities; examples of the application of the equations; compound interest; easy exponential equations. (*b*) Planimetry: Occasional exercises and constructions; Theorem of Ptolemy. (*c*) Trigonometry: Plane trigonometry, complicated problems being excluded. (*d*) Stereometry: Illustrative introduction; the simple bodies, and simultaneously calculation of the lengths of edges and of contents.

Physics.—Preparatory course: Magnetism, Electricity, Acoustics, a few simple parts of Optics; the most important chemical phenomena; Crystallography: some parts.

OBERTERTIA.

German.—Hopf und Paulsiek for Obertertia, with special regard to Schiller's and, partly, Goethe's Ballads. Besides,

Division A: Schiller's Tell. From Goethe's Dichtung und Wahrheit the sections on Frankfurt.

Division B: Chamisso's Peter Schlemihl. Immermann's Oberhof. Riehl's Stadtpfeifer. Rosegger, das zu Grunde gegangene Dorf. Private reading: Uhland's Ludwig der Bayer, Körner's Zriny. Exercises in off-hand speaking. Poems and selected pieces from the reading were committed to memory; previously learnt poems were repeated. The most important parts of German Metrics. An essay every month.

Latin.—Reading: Cæsar, De bello Gallico I–VI; Ovid's Metamorphoses, in Division A VI, 313–381; VIII, 611–735; in Division B also VI, 146–313. Suitable passages were committed to memory. Grammar: Systematic repetition of the Accidence and of the vocabulary learnt in Untertertia. From the Syntax by Reinhardt the rules regarding the parts of the sentence, §§ 1–107, were gone through systematically; the principal rules regarding the different kinds of the simple sentence and of the complex sentence were treated propaedeutically (in connection with the reading). From the Exercise book by Ostermann-Müller (Part IV: Tertia) selections from the pieces 1–99, and nearly all the pieces from 111–179 were translated. Written work at least once a week (work done in class or at home).

French.—

Grammar: Banner, Syntax, §§ 64–108, and the corresponding exercises from Banner's Materials for Translation were gone through. Accidence repeated.

Reading—

Division A: Daudet, Le Petit Chose; Daudet, Selected Narratives from Lettres de mon moulin und Contes du lundi. Contents stated in French, and conversations on what had been read.

Division B: Daudet, Le Petit Chose. Erckmann-Chatrian, Histoire d'un conscrit. Every fortnight a written exercise, in connection with the Grammar or Reading.

History.—German history from the Reformation to the death of Frederick the Great. In Division A, as far as Frederick the Great's accession to the throne. Constant repetitions from former sections. During the winter, an hour was each week devoted to the repetition of ancient history.

Geography.—The German colonies; physical geography of Germany; repetition and completion of previous courses.

Mathematics.—(*a*) Arithmetic: Equations of the second degree. Applications of the equations to the problems of the text-book. Involution. Logarithms. (*b*) Planimetry: The simpler propositions relating to similar figures, calculation of the circumference and area of the circle; constructions: fundamental problems, geometric loci, geometric analysis.

Physiography.—During the summer: Anthropology (including reference to the preservation of health, and comparisons as regards the structure of the vertebrata). Text-books: Schilling, Grundriss I, Noll, Naturgeschichte des Menschen.

During the winter: Mechanical phenomena. Theory of Heat: the most important parts.

Drawing.—Natural objects, ornamental casts and mouldings: effects of light and shade (executed in colour pencil, and chalk).

UNTERTERTIA.

German.—

Selected pieces from Hopf und Paulsiek for Untertertia were read and discussed; some were committed to memory (special regard was paid to Uhland). Uhland's Ernst von Schwaben.

Besides,

Division A: Ludwig der Bayer, Storm's Pole Poppenspäler.

Division B: Fouqué's "Undine." German prosody: the most important parts. Off-hand speeches. Repetition of grammar. Every four weeks written work done either in class or at home.

Latin.—Regular and irregular Accidence, according to the Latin Reading-book for the elementary teaching of more advanced pupils, by Wulff-Perthes. Lessons 1–100, together with the corresponding sections of the Wortkunde and the Formenlehre by Perthes–Gillhausen (Edition B), were gone through, likewise the syntactical juxtapositions of the Wortkunde. Translating from German into Latin was practised orally and in writing, by retranslating and abundant transformation of the sentences, the Exercise-book by Wulff being partly used. Constant exercises in declension and conjugation. Every week work done in class, and written home-work.

French.—

Reading—

Division A: Souvestre, Sous la Tonnelle; Verne, Tour du monde en 80 jours; Molière, Le Bourgeois Gentilhomme, commenced.

Division B: Bruno, Le Tour de la France; Molière, Le Bourgeois Gentilhomme. Conversational exercises in connection with the reading. Banner, Franz. Satzlehre, §§ 1–63, were gone through, and the corresponding exercises in the "Deutschen Übersetzungsstoff" by Banner were translated, partly orally, and partly in writing. Repetition of the Accidence. Every fortnight written work done in class, partly translations, partly off-hand retelling, partly dictation.

History.—Germany history as far as the Reformation. Constant repetition, also from ancient history.

Geography.—Asia, Africa, America, Australia. Political geography of Germany, repeated. Exercises in drawing of maps.

Mathematics.—(*a*) Arithmetic: Exercises in fractions. Equations of the first degree, with one or several unknown quantities, together with applications to the problems in the text-book. Extraction of square roots. Partial division. Involution: positive integral indices. (*b*) Planimetry: Rectilinear figures (equivalence of areas, calculation of areas). Simple problems in division and transformation. Some easy proofs of the Theorem of Pythagoras. Applications of the Theorem of Pythagoras. Exercises.

Natural Science.—More difficult species of plants for the completion of knowledge in Morphology, Systematism, and Biology. Discussion of the most important useful foreign plants. Anatomy and physiology of plants, as well as cryptogams and diseases of plants: some parts. General view of the animal kingdom, with special regard to the lower animals.

Drawing.—Simple bodies, forms of vessels, and ornamental casts and mouldings: effects of light and shade.

QUARTA.

German.—Hopf und Paulsiek for IV, prose read and explained. The poems prescribed by regulation were committed to memory. Parts of speech, parts of a sentence, simple sentence, complex sentence, period. Rules of punctuation. Exercises in grammar, punctuation, and orthography. Every week or fortnight written work: dictation, grammatical repetition, essay done in class or at home.

French.—Banner, Französisches Lese- und Übungsbuch, Second Course, gone through, some of the poems committed to memory; repetitions from the first course. St. Hilaire, Courage et Bon Coeur, read. The Accidence, especially the verb, was repeated. The paragraphs on Syntax prescribed for Quarta were gone through and firmly established by examples from the reading. Banner, deutscher Übersetzungsstoff, was extensively used for exercises in translation and grammar. Conversational exercises in connection with the reading and mostly in the scholastic intercourse with the pupils. Every week written work.

History.—The principal events of ancient history were discussed and retold by the scholars; a collection of more important dates of ancient history was committed to memory.

Geography.—The European countries (Germany excepted); in connection therewith, treatment of important teachings of general geography. Exercise in the use and reading of maps, and in drawing sketches of maps and contours. The revolution of the earth and the phenomena in connection with the same.

Mathematics.—(*a*) Arithmetic: Rule of three. Interest. Chain-rule. Introduction into Algebra; the first four rules of Arithmetic (with abstract numbers). Reidt: Aufgabensammlung (Collection of Problems) as far as § 14—b. Geometry: Theorems relating to straight lines, angles, triangles, and parallelograms. Theorems relating to the circle as far as § 23, Reidt. Simple problems in construction.

Physiography.—In summer: Comparative description of related species and families of phanerogamous plants from available specimens. Review of the natural system of botany. Vital functions of plants. Observation of phenomena in nature, during walks.

In winter: Fishes, lower animals, especially useful and injurious ones, as well as their enemies, with special regard to insects. In connection therewith exercises in drawing of simple forms.

Drawing.—Simple plane ornaments. Flowers, rosettes, panels, bands—in contour and executed in colours.

QUINTA.

German.—Hopf und Paulsiek for Quinta; pieces in prose were read, explained, and retold off-hand by the pupils, either entirely, in part, or in an abridged form. Narratives from Greek and Roman tradition and history. The poems prescribed by regulation for the purpose were committed to memory. Repetition of the grammar of the simple sentence, and treatment of the complex sentence according to the German Syntax by Prigge. Weekly written work: exercises in orthography, grammar, and diction; off-hand retelling in connection with the reading. At times grammatical work done at home (pictures for the construction of sentences).

French.—Banner, Französische's Lese- und Übungsbuch, Second Course, the pieces as far as the irregular verbs of the third conjugation were gone through (the "Wiederholungsstücke" were omitted). Poems and pieces in prose were committed to memory. Parts of the first course were repeated. Conversational exercises in connection with the reading, material, and pictures. Weekly written work done in class: dictation, grammatical exercises, short narratives, answering questions put in French, translations; about every two weeks work done at home. Portions from Banner, Übersetzungsstoff, Part I (Accidence) were translated, orally and in writing.

Geography.—Physical and political Geography of Germany and the adjacent countries; in connection therewith introduction into the understanding of maps, and practice in reading the same. Treatment of some important teachings of scientific geography.

Arithmetic.—(*a*) Arithmetic: the first four rules (with vulgar fractions); simple and double rule of three (with direct and reciprocal ratios). Repetition of the first four rules (with vulgar and decimal fractions). (*b*) Planimetry: Theorems in regard to straight lines and angles; geometrical drawing.

Physiography.—In summer: Description of representatives of clearly distinguished families of plants. Discussion of certain physiological and biological peculiarities of the same, as well as their relations to mankind and to animals. In connection with some plants, reference to the history of their propagation. At the same time practice in drawing simple and important parts of plants.

In winter: Supplementary lessons from the class of mammalia, and review of its principal groups. Consideration of birds, with special regard to their structure, their life, and their characteristic features in nature and their relations to mankind. A few typical representatives of the reptiles.

Drawing.—Straight line, right angle, rectangle, square, equilateral triangle, octagon, hexagon, and pentagon; rectilineal ornaments. Curves applied in shapes of leaves and flowers (reduced to geometrical forms).

Writing.—German, Roman, and Greek characters.

SEXTA.

German.—Hopf und Paulsiek for Sexta, pieces in prose read, explained, and retold off-hand by the pupils. Narratives from national tradition and history. The poems prescribed for the purpose by the regulation committed to memory. The parts as well as the different kinds of simple sentences according to the German Syntax by Prigge (the paragraphs intended for Sexta), the most important rules regarding clauses; inflections: strong and weak distinguished. Weekly written work done in class; during the winter also work done at home for practice in Syntax; exercise in orthography and grammar.

French.—Banner, Französisches Lese- und Übungsbuch, First Course, as far as Piece No. 37 read, translated and practised by grammatical and objective analysis, by abundant transformation, by presentation in the form of dialogues, and by utilisation of the vocabulary in questions and answers Most of the poems and the pieces in prose were committed to memory. The regular Accidence in particular avoir and être, and the regular verb ending in -er were gone through. Weekly written work done in class, dictation, translation of dictated German sentences and forms into French, answering questions put in French.

Geography.—Fundamental conceptions of physical and mathematical geography; elementary and based on the nearest local environment. Primary instruction for understanding the globe, relief, and maps. Geographical and general knowledge (Heimatskunde) of Frankfurt. Observation in the open air. Plain of the Upper Rhine, and Swabian-Franconian terrace country. Comprehensive survey of Europe.

Arithmetic.—Repetition of the first four rules with integers. The German weights, measures, and coins; the first four rules of Arithmetic with concrete integral numbers and decimal fractions, together with exercises in the Decimal System of Numeration and Notation.

Physiography.—In summer: description of available phanerogamous plants; in connection with the same, explanation of the forms and parts of plants, and partly also of the functions of roots, stems, leaves, flowers, easily distinguishable modes of inflorescence and fruits. The most important forest trees and their characteristics.

In winter: Description of important mammals and a few birds in regard to form, colour, and size, from available specimens and illustrations, together with information as to their habits, their usefulness or injuriousness.

Writing.—German and Roman characters.

SYNOPSIS OF TIME TABLE OF THE WILHELM GYMNASIUM, HAMBURG, 1901–1902.

Subjects.	No. of Hours per Week.								
	Ia.	Ib.	IIa.	IIb.	IIIa.	IIIb.	IV.	V.	VI.
Obligatory.									
Religion—Evangelical	2	2	2	2	2	2	2	2	2
German	3	3	2	2	2	2	2	2	3
Latin	7	7	7	8	8	8	8	8	8
Greek	6	6	6	6	6	6	.....	.....	.....
French	2	2	2	2	3	3	5	.....	.....
English	2	2	2	2	.....	.....	.....	.....	.....
History and Geography	3	3	3	3	3	3	4	3	3
Mathematics and Arithmetic	3	3	4	3	3	3	4	4	4
Science	2	2	2	2	1	1	2	2	2
Drawing	.....	.....	.....	.....	2	2	2	2	.....
Writing	.....	.....	.....	.....	.....	.....	.....	2	2
Total	30	30	30	30	30	30	29	25	24
Optional.									
Gymnastics	3	3	3	3	3	3	3	3	3
Hebrew	2	2	2	.....	.....	.....	.....	.....	.....
Singing	2	2	2	2	2	2	2	2	2
Drawing	2	2	2	2	.....	.....	.....	.....	.....
Total	9	9	9	7	5	5	5	5	5

SYNOPSIS OF TIME-TABLE OF THE MUSTERSCHULE (MODEL SCHOOL) REALGYMNASIUM, FRANKFURT ON THE MAIN.

Subjects	Realgymnasium.										Preparatory School.			
	Ober-Prima.	Unter-Prima.	Ober-Sekunda.	Unter-Sekunda.	Ober-Tertia.	Unter-Tertia.	Quarta.	Quinta.	Sexta.	Total No. of hours.	I.	II.	III.	Total.
Religion, Evangelical	2		2	2	2	2	2	2	3	17	2	2	2	6
„ Catholic	2			2			2		(+1)	7		2		2
German	3	3	3	3	3	3	4	3+1	4+1	31	10	8	8	26
Latin	6	6	6	6	8	8	...	...	...	40	...	...	...	...
French	3	3	3	3	4	4	6	6	6	38	...	...	...	...
English	4	4	4	6	...	...	...	...	...	18	...	...	...	...
Geography and History	3	3	3	3	3	3	6	2	2	28	...	...	...	...
								German.						
Mathematics and Arithmetic	5	5	5	4	4	4	5	5	5	42	5	5	5	15
Physics	2	2	2	2	...	...	...	...	...	8	...	...	...	...
Chemistry	2	2	2	...	...	...	...	...	...	8	...	...	...	...
Nature—Description	...	...	...	...	3	3	3	2	2	13	...	...	...	...
Writing	...	...	...	...	...	...	...	2	2	4	3	3	3	9
Drawing	2		2	2	2	2	2	2	...	14	...	...	...	...
Gymnastics	3		3	3	3	3	3	3	3	24	2	2	...	4
Singing					2			2	2	6	1	1		2
Religion, Jewish (optional)	...	...	...	...	2		2			4	2	2		4
Writing	...	...	...	...	...	...	1	...	...	...	...	...	...	...
„ (Optional)	...	...	...	...		1	...	...	...	2	...	...	...	...
Perspective Drawing	2		2	...	...	...	...	...	...	4	...	...	...	...

SYNOPSIS OF TIME-TABLE OF THE WOHLER REALGYMNASIUM, FRANKFURT ON THE MAIN, WITH COMMERCIAL HIGH SCHOOL AND PREPARATORY SCHOOL.

Subjects.	A.—Realgymnasium.																		Preparatory School,						Total hours per Week.
	I 1.		I 2.			II 1.			II 2.		III 1.		III 2.		IV.		V.		VI.		1		2		3		
*)	L.	F.	L.	H¹.	F.	L.	H².	F.	L.	F.	L.	F.	L.	F.	L.	F.	L.	F.	L.	F.	1a.	1b.	2a.	2b.	3a.	3b.	
Religion—																											
Evangelical	(2)		(2)			(2)			2	2	2	2	2	2	2	2	2	2	3	3	2	2	2	2	2	2	44
Catholic	(2)								(2)								(2)		(1)				(2)				9
Jewish (optional)	...	...	...	...	...	...	...	...	(2)				(2)				(2)				(1)		(1)		(1)		9
German	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	4	3	4	4	5	9	9	7	7	11	11	119
Latin	4	6	4	...	6	4	..	6	4	6	4	8	4	8	7	...	8	...	8	..	...	...	...	...	...	...	87
French	4	3	4	5	3	4	5	3	4	3	5	4	5	4	5	6	...	6	...	6	...	...	...	...	...	...	79
English	3	4	3	5	4	3	5	4	3	6	3	...	3	...	...	...	...	...	...	...	...	..	...	...	...	..	46
History, Geography, Mathematics, Arithmetic	3	3	3	3	3	3	3	3	3	3	4	3	4	3	4	6	2	2	2	2	...	...	...	...	...	...	56
	5	5	5	5	5	5	5	5	5	4	5	4	5	4	4	5	4	5	4	5	5	5	5	5	5	5	125
Nature—Description	...	...	...	...	...	...	...	...	2	...	2	1	2	3	2	3	2	2	2	2	...	...	...	...	...	...	23
Physics	3	2	3	...	2	3	...	2	3	3	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	23
Chemistry, Mineralogy	2	2	2	2	2	2	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	16
Laboratory	(2)	(2)	(2)	...	(2)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	8
Caligraphy	...	...	...	...	...	...	...	...	...	...	(2)						2	2	2	2	4	4	4	4	...	...	26
Drawing	2	2	2	(2)	2	2	(2)	2	2	2	2	2	2	2	2	2	2	2	...	...	...	...	...	...	...	...	36
Perspective Drawing (optional)	(2)		(2)			(2)			...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	6
Commerce	...	...	...	3	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	6
Political Economy	...	...	...	2	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	4
Italian, Spanish (optional)	(2) × (2)								...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4
Gymnastics	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	...	...	62
Singing	(2)																2	2	2	2	1	1	1	1	...	...	14
Total	34	35	34	33	35	34	34	35	34	35	33	32	33	32	32	31	30	30	30	30	23	23	21	21	18	18	802

* *Abbreviations.*

L.—Classes in the Realgymnasium according to the "General Curriculum," with Latin as the leading foreign language.
F.—Classes in the Realgymnasium according to the "Frankfurt Curriculum," with French as the leading foreign language.
H¹.—Commercial first.
H².—Commercial upper second.
a and b.—Parallel classes in the Preparatory School.

SYNOPSIS OF TIME-TABLE OF THE OBERREALSCHULE, BEFORE HOLSTENTHORE, UPPER AND PREPARATORY, HAMBURG.

Subjects.	Ober-Prima.	Unter-Prima.	Ober-Sekunda.	Unter-Sekunda.	Ober-Tertia.	Unter-Tertia.	Quarta.	Quinta.	Sexta.	Total.
Scripture	2	2	2	2	2	2	2	2	2	18
German	4	4	4	3	3	4	4	5	6	37
French	4	4	4	5	5	5	6	6	6	45
English	4	4	4	4	4	4	4	...	...	28
History, Geography	3	3	3	2	2	2	2	...	...	17
				2	2	2	2	2	2	12
Mathematics	5	5	5	5	5	5	2	...	...	32
Arithmetic	.....	.....	.....	1	1	1	2	4	5	14
Physics	6	6	6	5	3	...	...	...	...	26
Nature—Description	.....	.....	.....	.....	2	2	2	2	2	10
Drawing	2	2	2	2	2	2	2	2	...	16
Writing	.....	.....	.....	.....	...	1	1	2	2	6
Total A	30	30	30	31	31	30	29	25	25	261
Singing	.....	.....	.....	.....	1	2	2	2	2	9
Gymnastics	2	2	2	2	2	2	2	2	2	18
Optional.										
Spanish, or	3	3	3	.....	...	...	...	...	...	9
Descriptive Geometry	2	2	2	.....	...	...	...	...	...	6
Laboratory	2	2	2	.....	...	...	...	...	...	6
Total B	10	10	10	2	3	4	4	4	4	48
Total A+B	32–36	32–36	32–36	33	34	34	33	29	29	309

OBERREALSCHULE.—SYNOPSIS OF SUBJECTS OF PREPARATORY SCHOOL, HAMBURG.

Subjects.	1.	2.	3.
Biblical History	2	2	2
Local Geography	2	.....	.....
Object Lessons	2	2	}
German, with reading	8	7	} 10
Writing	3	3	}
Arithmetic	5	5	4
Singing and Gymnastics	2	2	2
	24	21	18

SYLLABUS OF THE OBERREALSCHULE, HOLSTENTHORE, HAMBURG.

4A. Teaching Plan of the Higher Classes.

Teaching Object.	Upper Secunda.	Lower Prima.	Upper Prima.
Religion (2 hours).	Lectures on the history of the Apostles with regard to important places, and references from the letters of St. Paul and St. Peter which are necessary in order to be able to understand the same. History of the Christian Church until the Reformation with regard to Non-Christian Churches. Lectures on the most important contemporary sources (out of Noack's church-historical reading-book).	History of the Christian Church from the Reformation until the present time, with special regard to the time of enlightenment and of the 19th century. Full explanation of one letter (as *e.g.*, 1st of the Corinthians.)	Doctrine of belief and manners in conjunction with the writings on confession of Reformation. Reading of the letter to the Romans. Retrospection to the writings of the New Testament.
German (4 hours).	Survey of the development of the German language and literature until the time of Reformation (included), in conjunction with sections of pieces of Poetry and Prose, given in the Reading Book (Schauenburg-Hoche, Part I). Reading of the "Song of the Nibelungs," chosen pieces of the "Song of Gudrun," some patterns of "Court Epic and Lyric," especially of the songs and sayings of "Walther von der Vogelweide" in the original. Reading of a classic drama, *e.g.*, "Gotz von Berlichingen," Egmont, Maria Stuart. Expositions of the pupils, of their private work, especially of Greek and Roman historians and epic writers. Ten essays, of which two at least must be worked out in class.	Survey of the history of Literature from Opitz until Schiller, in conjunction with the reading of sections of the more important works of the 17th and 18th centuries. In addition to this, expositions of pupils. Conversations on Lessing's dramas (esp. Nathan), Schiller's "Wallenstein," and a tragedy by Sophocles. Occasional lessons on (single) separate chapters of Psychology and Logic. Ten essays, two of which at least must be worked in class.	Survey of the history of the Literature of the whole 19th century, in addition to the reading of sections of more important works. Discussions on the lyric poems of Goethe in conjunction with his life. Reading of "Iphigenie" and "Faust." Free (*viva voce*) expositions of the pupils. Summary of the most prominent philosophical views of the world. Ten essays, two of which at least must be worked in class.
French (4 hours).	Introduction into the knowledge of important realities concerning geography, history, and political life, as well as the main representatives of the more modern Literature, mostly in conjunction with the private and class reading which is to be chosen with this regard. The French language to be used exclusively. Discussion of important actual events. The written work, gradually increasing in volume, is spontaneous and individual, and consists of the reproduction of works, which are either read or openly in class reported on by the individual student, and which belong mostly to foreign nations. Half of this work is prepared under supervision; occasional dictation and translations into German, references, and a summary of that which has been read, grammatical repetition and deepening of a knowledge of grammar in conjunction with the correction of the written work.		
	Geography of the country. Topography of the capital. The principal dates of the more modern history. Introduction into the technical Terminology. One play of Molière.	History of the Revolution, with special regard to the leading spirits of the 18th century. One classical drama.	The age of Louis XIV, with reference to the classic period. Sketches of the later and of the latest literary waves, giving examples.
English (4 hours).	The same as under the last chapter, viz., French, except line 3, for the word *French* substitute *English*. The English language to be used exclusively.		
	Geography of the country, Topography of the capital, the principal dates of history since 449. Technological lectures. One essay of an historical kind or a novel.	The growth of the colonies in conjunction with the history of the Motherland. One play of Shakespeare in class, another to be read privately. One essay of Macaulay. Biographies of the most important modern writers as far as Byron (included), giving examples.	
Spanish (3 hours), Optional.	Practical introduction into the business-language, the most important phrases and expressions of daily life. Conjugation of the verb.	Elementary Syntax. Exercises how to use the language both in speaking and writing, in conjunction with reading. (The reading book is "Grafenberg.") Introduction into commercial correspondence.	The more difficult chapters of Grammar. The most important parts of the History and Literature of Spain. Reading of some light modern prose-writers, one classical drama, or a modern work on poetry.
History and Geography (3 hours).	Greek and Roman History, together with the geographical knowledge of the scene of events and occasional repetition of Geography.	History of Germany, especially that of Hamburg, and in reference to the important events in the neighbouring countries from 375–1648. Repetition of Geography.	German History, as in the Lower Prima, from 1648–1888. Repetition of Geography.
Mathematics (5 hours).	Amplification and deeper knowledge of Stereometry and Trigonometry, spherical geometry, mathematical geography and geocentric astronomy, complex numbers, cubic equations, solving of numerical equations of a higher grade.	Analytical geometry of the plane. Combinations, probabilities, exercises on the technicalities of Life-insurance, Binomial Theorem, Determinants, Diophantine Equations.	Analysis: Theory of Numbers, Differential Calculus for functions of one independent variation, and elements of the Integral. Geometry: Indeterminate equations; Calculation of the infinitesimal. Repetition of the Conic Sections with reference to projective geometry.
Representative Geometry (2 hours), Optional.	Representation of simple straight plane and curved plane bodies in a straight and slanting parallel projection. Representation of the point, the straight, and the plane through their projections and tracks. Occasional use of the slanting parallel projection. Numerous exercises on point, straight, and plane.	Plane sections of bodies (Prism, Pyramid, Prismatoid, Obelisk, Cylinder, Cone, Globe, Rotational body). Exercises on Conic Sections. Construction of regular bodies. Penetrations, Planes of tangents.	Shadow—constructions of points, lines, pieces of surface, bodies on planes, broken planes and curved planes. Elements of the constructive doctrine of illumination Linear perspective.

4A. Teaching Plan of the Higher Classes—*continued*.

Teaching Object.	Upper Secunda.	Lower Prima.	Upper Prima.
Physics (3 hours).	The science of Heat. Magnetism. Electrostatics (potential amount of charge, capacity, field-effect, condensers). Galvanism: I (The stream and its laws, effects of the same in the course of the stream). Practical (2 hours): Mensuration and observations from all parts of elementary Physics.	Galvanism: II (Effects of the stream outside its course, especially induction; chosen chapters of Electro-technic). Science of waves; science of sound; science of light. Practical (2 hours); only in the first half-year; Exercises for more advanced students.	The mechanics of the material point and of rigid bodies. The main points from the mechanics of the aggregate conditions, Comprehensive repetition of the whole according to single points of view.
Chemistry (3 hours).	Enlargement on and deeper knowledge of what has been taught in the "Realschule." The most important technical salts. In this, as in the next two classes, students have to follow up the progressive growth of the chemical industry and Electrochemistry with regard to the history of Chemistry.	Higher grade steps of oxydating and reduction of the same. Hydrogurets. Systematic revision of inorganic chemistry. Mineralogy with the influence of Metallurgy. Elements of Petrography and Geology. Practical (2 hours in second half-year): Simple exercises and practice in strict conjunction with the previous tuition, for the repetition and deepening of the same. Stoichiometric exercises.	The most important organic connections of the series of fats and benzoyl, with special consideration of the chemical industry. Repetition of the anatomy of plants and of the human body, for the purpose of making the simple physiological processes intelligible. Practical (2 hours): Analysis of simple bodies and mixtures of such; the bases of the analysis of weight and measurement. Inorganic and organic preparations. In addition to the instruction, there is microscopic practical work of a botanical-zoological kind.

4C. Summary of the Teaching Matter taken in the Middle Classes.

Teaching Object.	Lower Secunda (2nd).	Upper Tertia (3rd).	Lower Tertia (3rd).
1. Religion	Introduction to the Gospel of St. John. Summary of the principal events of Church history, especially of the History of the Reformation.	Literature of the prophets and the doctrine of the Old Testament. The Sermon on the Mount and the Parables. To be learned by heart: The 5th article of faith, with Luther's explanation. Proverbs, songs, and psalm 90.	Gospel of St. Mark and History of the Apostles, Chap. 1–12. The 4th article of faith, with Luther's explanation. Proverbs, songs, and psalm 121.
2. German	Discussion of chosen poems of Schiller. To be read:—The Maid of Orleans, William Tell, Hermann and Dorothea, Minna v. Barnhelm, Kleist, Prince of Hamburg. Biographies of the principal representatives of literature. Exercises on the proper arrangement of matter. Every three weeks, one essay.	Reading from Meyer-Nagel, and exercises on proper arrangement of matter. The Song of the Nibelungs. Sections of Voss' translation of Homer, Schiller's and Wallenstein's Lager. Uhland, Herzog Ernst. Hebbel, Nibelungen. Thorough discussion of chosen poems, and recital of the same. Elementary laws of Prosody. Every three weeks, one essay.	Reading from Meyer-Nagel 4, together with exercises on the proper arrangement of matter. Thorough discussion of poems (especially of the ballads of Uhland and Schiller) and recitations. Syntax. Every three weeks, one essay, mostly on what has been read.
3. French	Finishing and repetition of the whole grammar according to Plattner, short school grammar. Wolter, France, Part I. Souvestre, Au coin du feu, Thiers, Expédition d'Egypte. Class-work every fortnight.	Reading: Sous La Tonnelle (Velhagen). From Gropp and Hausknecht, the poems of Béranger are specially read, and part of them learnt by heart. Maigue, Inventions Industrielles (Gärtner).—Syntax dictated in French (Forts). Repetition of grammar. Every three weeks, two written pieces of work, half of which is reproduction (at home and in class), the other half, dictation and the changing of poems.	Reading: Bruno Le Tour de la France (Velhagen). Poems (Kühn) to be learned by heart. Systematic Grammar, of the principal parts of speech in French, to be copied in a special book. Every week one piece of written work, mostly done in class, and, for the greater part, reproductions, occasionally Dictation and exercises on Grammar. The language used when giving instruction is mostly French.
4. English	Finishing and repetition of the grammar according to Dubislav-Boek, Translations from Dubislav-Boek's "Übungsbuch," Hunre, Reign of Elizabeth, Duke of Monmouth. Class-work every fortnight.	Dubislav-Boek, School-grammar and book with exercises, sections 71–223. Reading, Bönsel's Reading-book. Burnett, Little Lord Fauntleroy. Class work every fortnight.	Dubislav-Boek, School-grammar, sections 125–225. Reading from Bönsel's Reading-book. Class work every fortnight.
5. History	German History, from Frederic the Great until the foundation of the New Empire. Repetition of the whole historical matter.	Modern History until the accession of Frederick the Great.	History of Germany until the Reformation.
6. Geography..	The parts of the earth outside of Europe. Repetition of the whole geography.	Germany and Austria, physically and politically. The German colonies. Sketching of maps.	The Non-European parts of the earth, physically and politically. Sketching of maps.
7. Mathematics	Logarithms. Arithmetical and Geometrical series. Compound Interest and Stocks and Shares. Quadratic Equations. Trigonometry and Stereometry.	Similarity of triangles; Exercises on construction. Calculation of the area of regular polygons, circumference and contents of the circle. Involution, Evolution. Equations, Simple, with several unknown quantities.	The doctrine of the circle. Propositions on equality of areas, alteration and division of finite rectilineal figures. Calculation of the area of triangles and parallelograms. Exercises on construction. The four species, with general numbers. Simple Equations.
8. Arithmetic..	Bills of exchange, calculation of different effects, Profit and Loss, calculations of freight, Factors, Bills of Sale, calculations of merchandise, tables of calculation, accounts current.	Interest, Discount, Present Worth and Discount. Insurance, Life Insurance, calculation of dates. Money, currency, discount on exchange, charges on exchange, Brokerage.	Calculations on Mixtures and Divisions Money currency.
9. Natural Science.	Physics: Electricity, Part II, Optics, Mechanics, Mathematical Geography. Chemistry: The most important elements and their simplest combinations. The acids and salts with reference to Mineralogy.	General qualities of bodies. Science of heat, Acoustics. Magnetism, Electricity Part I.	.....
10. Natural History.	.....	*Summer.*—Gymnosperms and Cryptogams; conclusion of the natural system; characteristic features of the anatomy and physiology of plants. *Winter.*—Suitable representations of non-vertebrated animals. The most important parts of the construction of the human body.	*Summer.*—Representatives of families of plants of more complicated construction of blossoms; in addition to this, some instruction about their appearances in life. The most important foreign agricultural plants. *Winter.*—Final repetition on vertebrated animals, organic animals, specially insects.

4c. Summary of the Teaching Matter taken in the Middle Classes—*continued.*

Teaching Object.	Lower Secunda (2nd).	Upper Tertia (3rd).	Lower Tertia (3rd).
11. Drawing....	In ornamental and perspective drawing, the continuation of what was learned in the previous class. Rendering of appearances of illumination on corporeal objects. Drawing and painting of natural bodies of all kinds: plants, fruits, stuffed animals, skeletons, etc.; drawing from figurative and plastic models of gypsum, execution in different ways, such as lead, charcoal, china-ink, red crayon, etc. The advanced students are taught to draw from Nature.	Continuation of perspective drawing of all objects in use by and in the immediate surroundings of the student. Drawing from models in gypsum the outlines, or for further execution, conformable to the purpose, and according to ornamental propositions of Behrens; free use of colours.	Free perspective drawing from models in wood; the outlines of tin and wooden utensils, etc. Occasionally exercises in drawing with a ruler.
12. Writing	.....	.....	Continuous sentences in difficult types in German and Latin writing, round hand (circular) writing.
13. Singing	A choir of the students of the Upper classes, who are gifted with a musical voice, together with the most practised students of the Tertias and Quarta, is instructed in Part-singing.		*Division A.*—Choral songs in unison and in part-singing, songs in part-singing and exercises of Becker and Kriegskotten. *III. Division B.*—Choral songs and songs for one and two parts and exercises.
14. Drill and Gymnastic Exercises.	The students practise in 12 divisions, each division 2 hours.		

4 c. Summary of the Teaching Matter taken in the Middle Classes.

Teaching Object.	Quarta (4th).	Quinta (5th).	Sexta (6th).
1. Religion....	History of the old Confederation. The Christian Church-year. Geography of Palestine. To be learnt by heart: The 2nd article of faith, with Luther's explanation. Proverbs, Songs, and Psalm 8.	Chosen stories of the New Testament. To be learned by heart: The 3rd article of faith, with Luther's explanation. Proverbs, Songs, and Psalm 1.	Chosen stories of the Old Testament; about the time of the high festivals of the New Testament, festival stories. To be learned: The 1st article of faith, with Luther's explanation. Proverbs, Songs, and Psalm 23.
2. German	Reading from Meyer-Nagel III. Recitation of poems and exercises, in telling again pieces of Prose. Essays in conjunction with the reading book and the historic instruction. Science of Composition and Punctuation.	Reading exercises from Meyer-Nagel II. Telling again what has been read. Learning by heart some poems. Every week some written work for practice in Orthography and Punctuation, changing in turn with an essay of a narrative or descriptive kind. Composition. The complex sentence.	Reading exercises from Meyer-Nagel I. Poems were learned by heart, small fables and stories were retold orally as well as in writing; in the 2nd half-year simple descriptions. Dictation for Orthography. Science of construction. The simple sentence.
3. French	Kühn, Lower class. Alternately pieces of Prose and Poetry, most of the latter to be learned by heart, and occasionally to be sung. Irregular Conjugation. Amplification of the vocabulary. Every week one piece of written work, at first only Dictation and Syntax, at last also reproduction of pieces read aloud at home and at final examinations in class. The language used, while giving instruction, is mostly French.	Kühn, Reading-book for beginners. Indicative mood of verbs ending in ir, oir, re; most of the irregular verbs. Partitive Article, Pronoun, Adverb. Poems learned by heart. Reconstruction of read (pieces) stories. Learn certain groups from the vocabulary. Hölsel's Ausch. Bilder. Written Exercises. Dictation. Descriptions, work on grammar.	Thorough Exercise on sound (also in writing) with concrete nouns. Small poems (partly sung). Kühn, French Reading-book for beginners. Imprinting on the memory of words in daily use: Avoir, être, and the regular conjugations together with position of words. Formation of the Feminine and Plural. Dictation, which increases gradually; also exercises on the conjugations.
4. English	Dubislav-Boek, Elementary Book on English. Exercises on sounds (also in writing), with words illustrating the various sounds. Short poems and pieces of Prose, partly learned by heart and partly sung—from Bönsel, English Reading-book. After the 1st quarter, on an average one dictation per week. Free transposition after reading in class, and also at home.	.....	.....
5. History	Ancient History	Stories from the Mythology of the Greeks and Romans. Biographies from the History of our fatherland.	Biographies and scenes from the History of our fatherland.
6. Geography..	Europe, with the exception of Germany, physically and politically; also the countries round the Mediterranean Sea. Sketches of simple maps.	Germany, physically and politically. Further introduction into the understanding of mapping and embossed work.	Fundamental conception of elementary physical and descriptive geography, also in conjunction with the surroundings. Oro- and hydrographic proportions of the surface of the earth in general.
7. Mathematics	Science of straight lines and angles. The different kinds of triangles. The propositions of the sum of the angles within a triangle; also of the exterior angles. The Propositions on Congruity. The science of the Parallelogram. The fundamental Exercises on Construction.	.....	....
8. Arithmetic..	Rule of Three. Notation and Percentage. Easy exercises on the calculation of areas and solid bodies.	Repetition of the four species with known numbers. The four species (*i.e.*, Addition, Subtraction, Multiplication, and Division) with common fractions and decimal fractions.	Repetition of the four species with unknown numbers. Resolving and Reduction, the four species with known numbers and the fundamental principles of fractions.

4c. Summary of the Teaching Matter taken in the Middle Classes—*continued.*

Teaching Object.	Quarta (4th).	Quinta (5th).	Sexta (6th).
10. Natural History.	*Summer.*—Representatives of the most important Phanerogamia. Development of the family characteristics. Fundamental notions of the Linnean System. *Winter.*—Conclusion of the system of Mammalia, and birds, reptiles, amphibious animals, and fishes.	*Summer.*—Comparative descriptions of plants. Amplification of the morphological conceptions, and the establishment of the same. Out of the known and newly-added isolated images, groups are formed. *Winter.*—Comparison; consideration of Mammalia and birds; in addition, an enlargement of the zoological notions, and development of the family characteristics.	*Summer.*—Description of some large-blossomed plants, of simple construction of blossoms. Exemplification of the morphological fundamental notions. *Winter.*—Individual descriptions of suitable representatives of the most important classes of animals, especially mammalia and birds. Exemplification of the zoological fundamental notions.
11. Drawing	Freehand drawing of curved plane figures from blackboards (according to Stuhlmann), and natural forms of plants (Glinser). Alteration of given forms. Introduction to Perspective Drawing; occasionally exercises in drawing with a ruler.	Freehand drawing of rectilineal plane figures from copy and blackboards of Stuhlmann. Alteration of given forms, accordance to guidance and instruction.	.....
12. Writing	Continuous sentences in difficult types in German and Latin characters. Round-hand writing.	Sinn's Copy-books, Book No. III.	Sinn's Copy-books, Book No. II.
13. Singing	*Division A.*—Choral songs set for one or more parts. Songs set for two and three parts. Exercises on the production and cultivation of the voice, according to Becker and Kriegskotten, Part III. *Division B.*—Choral and other songs set for one and two parts. Exercises on voice production.	Choral songs sung in unison. Other songs in two parts. Exercises on voice production and cultivation, according to Becker and Kriegskotten, Part II.	Choral and other songs sung in unison. Exercises on the production and cultivation of the human voice, according to the instruction of the Schoolchoir book of Becker and Kriegskotten, Part I.
14. Drill and Gymnastic Exercises.	The students are instructed in Drill and Gymnastic Exercises in 12 divisions, each division 2 hours.		

SYNOPSIS OF THE TIME-TABLE OF THE SECOND STATE REALSCHULE IN DRESDEN.

Subjects.	Class VI.	Class V.	Class IV.	Class III.	Class II.	Class I.	Total No. of Hours.
Religion	3	3	3	2	2	2	15
German	6	6	5	4	4	4	29
French	3	6	6	6	5	5	31
English	.....	.....	.....	4	4	4	12
Geography	2	2	2	2	2	2	12
History	1	2	2	2	2	2	11
Nature—Description	2	2	2	2	1	1	10
Physics	.....	.....	.....	.....	2	3	5
Chemistry	.....	.....	.....	.....	2	2	4
Arithmetic	5	4	4	2	2	1	18
Geometry	.....	.....	2	2	2	2	8
Algebra	.....	.....	.....	2	2	2	6
Descriptive Geometry	.....	.....	.....	.....	1	1	2
Drawing	2	2	2	2	1	1	10
Writing	3	2	2	.....	.....	.....	7
Singing	2	2	2	1	1	1	9
Gymnastics	2	2	2	2	2	2	12
Stenography (optional)	.....	.....	.....	(2)	(1)	(1)	(4)
Total	31	33	34	33 (35)	35 (36)	35 (36)	201 (205)

CHAPTER XXI.

GOETHE GYMNASIUM, FAÇADE, BAHNSTRASSE, FRANKFURT ON THE MAIN.

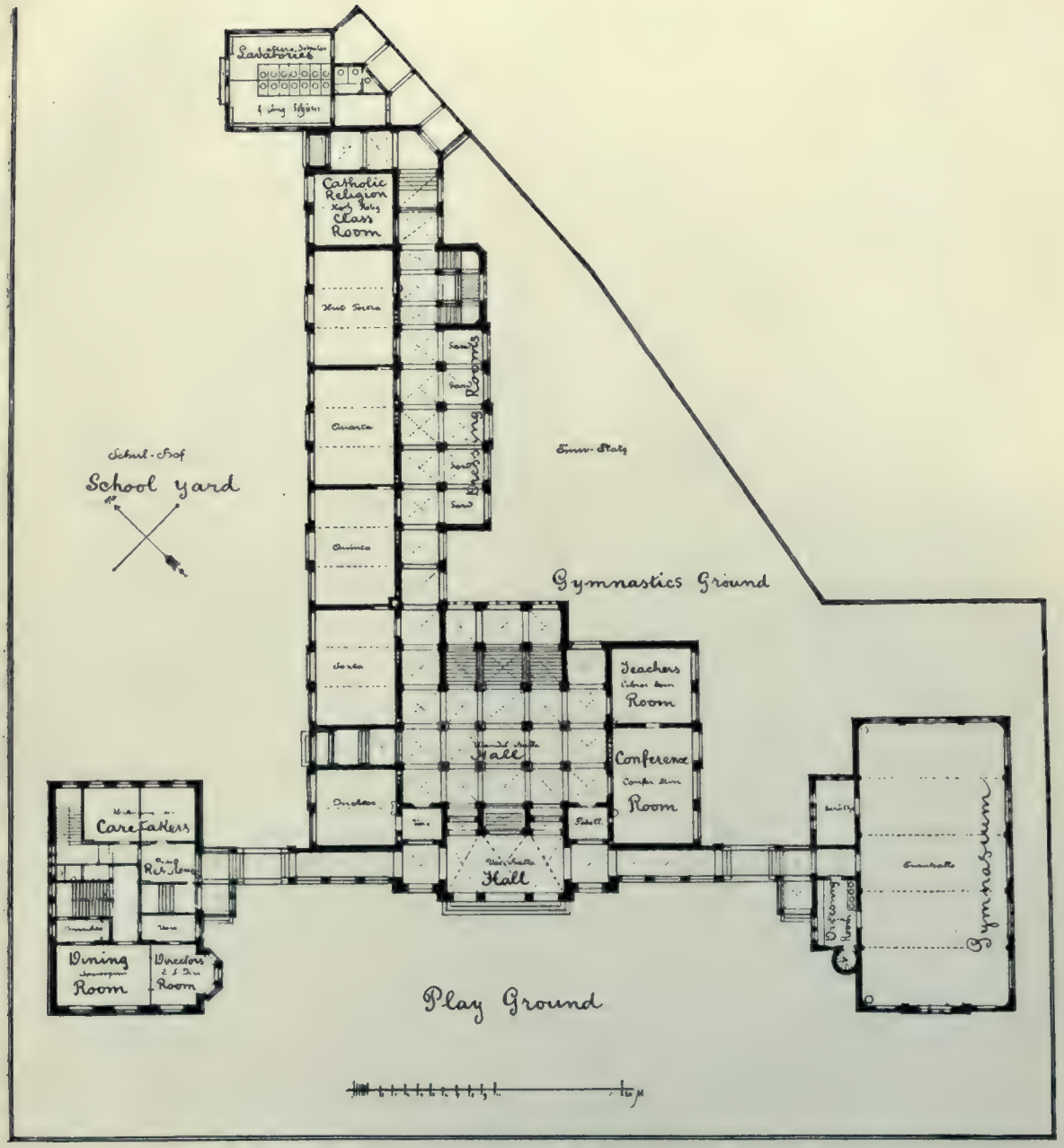
SIDE VIEW, SHOWING POSITION OF CLASS-ROOMS, GOETHE GYMNASIUM.

GOETHE GYMNASIUM.

GOETHE GYMNASIUM: GENERAL ASSEMBLY HALL.

GOETHE GYMNASIUM: VESTIBULE.

GOETHE GYMNASIUM: STAIRCASES.

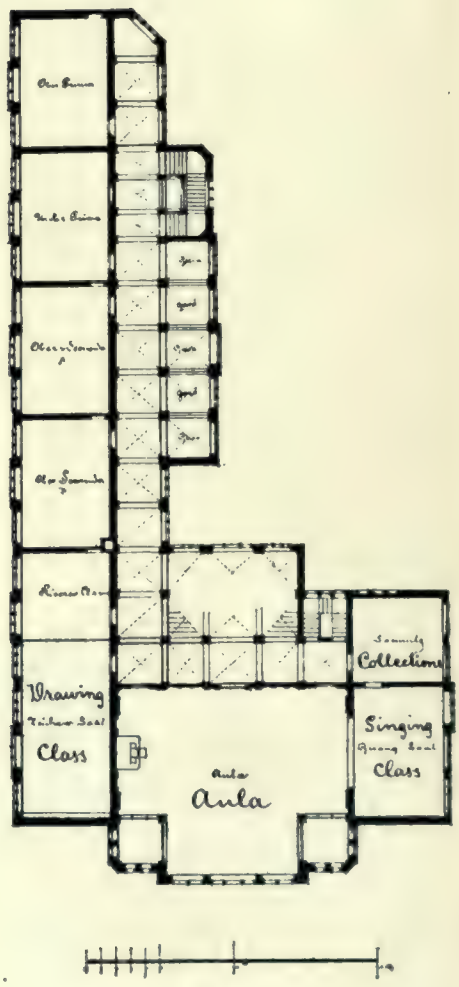


Erdgeschoss.

Ground Floor

GOETHE GYMNASIUM.

1. Obergeschoss.
1st Floor.



2. Obergeschoss.
2nd Floor.

GOETHE GYMNASIUM.

CHAPTER XXI.

Educational Qualifications of the Secondary Teachers of Germany.

[G. H. KNIBBS.]

1. *Introduction.*—Though secondary education, like primary, is dependent upon the professional qualifications of the teacher in respect of the art of teaching, in its higher stages at least it is also largely dependent upon his *knowledge* and his *mental horizon.* Wherever teachers are expected to teach all sorts of subjects, as, for example, ancient and modern languages, mathematics, natural history, and physical science, the result will be necessarily indifferent. Subjects taught by specialists who have first received broad general education, are certain to be taught not only more *thoroughly*, but also more *interestingly.* In fact it may be said that in general the enthusiasm of the teacher bears some sort of ratio to his thoroughness of knowledge. This is the fundamental view of the German authorities.

A very slight acquaintance with the secondary teacher of Germany will reveal the fact that he responds to the high educational qualifications which public opinion demands of him, while the directors are men whose "*savoir faire*" promises much for those who come under their influence.

Owing to the rapidity of the movements of the Commissioners, and the extent of the inquiry to be conducted by them, ranging through all forms of education from the Kindergarten to advanced technical education there was insufficient time to discuss details. The Commissioners are under exceptional obligations to Professor A. Riedler of the Technische Hochschule, Charlottenburg, Berlin, for direct information as to the trend of modern higher and technical education, and for introductions to eminent educationists, etc.

Limited as was the opportunity of the Commissioners, sufficient was seen to enable them to verify the statement made by English Pædagogues, as to the exceptionally high qualifications of the German secondary teacher. In their own subjects they keep in touch with the progress of study in various parts of the world. One of the consequences of the thorough state of information in Germany as to the progress of research elsewhere, is that during their University careers students learn who are the real workers of the world, and learn also to keep their horizon wide.

In regard to the information hereinafter given it may be stated that it is obtained direct from German sources. For Prussia, a very complete account will be found in Adolf Beier's "De höheren Schulen in Preussen und ihre Lehrer";[1] that gentleman having exceptional opportunities for acquiring an exact knowledge.

For other parts of Germany other German sources of information have also been used, equally certain.

2. *History of Scheme of qualifying Secondary Teachers of Prussia.*—The existing scheme of ensuring the thorough qualification of secondary teachers, dates back, practically to 1804, though its fundamental form was not acquired until W. von Humboldt, with Schleiermacher and Süvern, developed the regulations for examination in 1810. This examination ("*examen pro facultate docendi*") consisted of written papers, oral examination, and test lectures, covering the subjects of philology, history and mathematics. From 1827 the teachers of the Higher Burgher, Industrial and "Real" schools have also been required to pass examinations in mathematics, the natural sciences, history and geography, German language and literature, theology and the modern languages. A regulation in 1831 distinguished between the examinations, (1) *pro facultate docendi*, (2) *pro loco*, (3) *pro ascensione*, and the (4) *colloquim pro rectoratu.* The qualification acquired was to teach either two or one principal subjects (Hauptfächer) in the upper clases, these being (1) Greek, Latin, (2) German, (3) Mathematics, (4) Natural science, (5) History and geography, (6) Theology and Hebrew. On the 12th September, 1866, a new modification was established (Reglement für die Prüfungen der Kandidaten des höheren Schulamts). This covered the general preliminary education (allgemeine Vorbildung) of every candidate, and also his general education in the religious tenets of his denomination, in philosophy and pædagogy, in history and geography, and his knowledge of languages. Every candidate had to write an essay on some philosophical or pædagogical subject; and then he had to pass an examination in scientific subjects, contributing further one or two written papers thereon. Finally there was an oral examination covering general education, and the elected subjects. The qualification covered, as it were, three stages, viz., the right to teach in the three lowest, the three middle, or the three highest classes of the gymnasium. It now covers two stages.

On the 5th February, 1887, a new regulation (Ordnung der Prüfung für das Lehramt an höheren Schulen), which is almost identical with that of to-day, appeared. Those actually in force are constituted by the "Ordnung der Prüfung für das Lehramt an höheren Schulen von 12th September, 1898" (Regulations of the examination for the teaching-office in higher schools). There are, however, some modifications to this, which in chronological order are as follows :—

"Verfügungen" of 5 April, 1900, 21 May, 1900, 26 July, 1900, 24 October, 1900, 26 February, 1901, 20 March, 1901, 27 October, 1901. These, however, touch only details, nevertheless they are taken into consideration in the account hereinafter given.

At

[1] Sammlung der wichtigen, hierauf bezüglichen Gesetze, Verordnungen Verfügungen and Erlasse, nach amtlichen Quellen herausgegeben. 2. Auflage, Hulle a/S. 1902.

At the present time there are the following examining bodies (Wissenschaftliche Prüfungskommissionen), viz., in—(1) Königsberg, for East and West Prussia; (2) Berlin, for Brandenburg; (3) Greifswald, for Pommerania: (4) Breslau, for Silesia and Posen; (5) Halle, for Saxony; (6) Kiel, for Schleswig-Holstein; (7) Göttingen, for Hannover; (8) Münster, for Westphalia; (9) Marburg, for Hesse-Nassau; (10) Bonn, for the Rhine provinces.

These examining "commissions" consist exclusively of the University Professors, the members being nominated by the Minister, and the Director of the Commission forwards his reports to the Minister.

3. *Qualifications of Prussian Secondary Teachers. General.*—Instead of translating the regulations in their entirety, it will be sufficient to give an indication of their main requirements.

According to section 1, the object of the examination is to secure the scientific qualification for the teaching office and higher schools. By section 2, it is directed that the examination shall be held by the "Königliche Wissenschaftliche Prüfungskommission," the members of which are nominated by the "Minister der geistlichen, Unterrichts-und Medizinal-Angelegenheiten," who determines also the place of meeting and the jurisdiction district of the Commission. Membership of the Commission is limited to University teachers and schoolmen ("aus Universitäts-Lehrern und Schulmännern"), and each member is appointed for one year only, but he must continue in office, according to the "Verfüng" of 24th October, 1900, till the meeting of the next Commission.

According to section 5, it is essential that the candidate possess the maturity-certificate (Reifezeugnis) of a German Gymnasium or Realgymnasium, or of a Prussian or other German "Oberrealschule"; the latter, however, must be officially recognised as of equal standing with the Prussian Oberrealschulen. The candidate must further have spent six semesters in a German State University, in studies appropriate to his teaching. The qualification in mathematics, physics, and chemistry may also be made in a German technical high school. In the case of teachers for qualification in French and English, residence in a foreign country, or attendance at foreign high schools where the instruction is given in those languages, will, at the Minister's discretion, reduce the required time to be spent at the German institutions.

Section 6 prescribes that the application for examination must be made by the candidate in his own hand-writing, and must state in what subjects and for what grade of teaching in the school the candidate wishes to qualify. With the application, his full name, the standing of his father, the date and place of his own birth, his religious persuasion, his school education, and full information as to his academic studies, must be transmitted. His original certificates, a statement as to his military service, etc., must also be forwarded. When the application is made later than a year after leaving the University, he must submit official testimony as to his walk in life. Should he be a Doctor of Philosophy, he must forward a copy of his "Doktordissertation," together with his diploma as doctor. Where the candidate has published any writings or treatises, he must also submit a copy of them.

After a review of the application with its enclosures, the Chairman of the Commission decides whether the applicant shall be admitted to examination or not (sec. 7).

The examination consists of two parts, viz., a "General Examination" and a "Subject Examination," each being both written and oral. The subject matter of the thesis produced by the candidate (not under supervision) is also subject to oral examination (sec. 8).

According to section 9 the subjects of examination at the present time are:—

(A) A *general examination* in philosophy, pædagogy, German literature, and, for candidates who belong to a Christian Church, the theology of his Church.

(B) A *subject examination*, the nature of which depends upon the candidate's own selection of subjects. This last ranges over the following subjects, viz.:—

(1) Christian theology; (2) Philosophical propædeutics; (3) German; (4) Latin; (5) Greek; (6) Hebrew; (7) French; (8) English; (9) History; (10) Geography; (11) Pure mathematics; (12) Applied mathematics; (13) Physics; (14) Chemistry and Mineralogy; (15) Botany and Zoology; (16) Polish; (17) Danish.

There is a limit in the options, for example, the candidate may select Latin and Greek, French and English, history and geography, religion and Hebrew, pure mathematics and physics, chemistry and mineralogy, together with physics or with botany and zoology. Instead of Hebrew, German itself may be taken. Applied mathematics can be taken only as an adjunct to pure mathematics, and so on. This depends upon the extent of what may be called the natural affinities of the subjects.

In the oral examination of Part (A), candidates are examined as follows:—

(1) In *Theology* the candidate must shew acquaintance with the content and interdependence of the sacred writings, the history of the Christian Church, and the principal tenets of his denomination.

(2) In *Philosophy*, the most important features of its history, as well as the principal theories of logic and psychology, form the subject matter of the examination. The candidate must further shew that he has critically read a philosophical work.

(3) In *Pædagogy*, he must prove that he understands its philosophical foundations, as well as the most important features of its development since the 16th century, and that he has acquired a clear understanding of the problem of his future profession.

(4) In *German literature*, the history of its development from the commencement of the 18th century, is subject matter in the examination. Further, the candidate must satisfy the Examiners that since leaving school he has continued to critically read the more important works of the day. In the case of candidates who qualify in philology or philosophical propædeutics or in German, the general examination may omit the subject. (See sec. 10.)

The teaching qualification in individual subjects has two grades, one for the lower and middle classes to the "Untersecunda" (UII) inclusive; the other for the upper classes to the "Oberprima" inclusive (OI). There are respectively the second and first grades (Zweite Stufe, erste Stufe).

Owing to their position in the curriculum, the qualifications in philosophical propædeutics, in Hebrew, and in applied mathematics, are bestowed only for the first grade.

In

In the case of Botany and Zoology, which do not constitute subjects of instruction in the upper classes, the first grade denotes that the candidate has a thorough and comprehensive scientific knowledge thereof (eingehende wissenschaftliche Kenntnisse).

The qualifications for teachers of drawing and of gymnastics will be dealt with specially later, (sections 22 and 23) hereinafter.

In acquiring the first grade it is uniformly implied that the conditions of the second are completely satisfied, so that the candidate, by qualifying in the first grade, is qualified for both. (See sec. 11.)

4. *Qualification to teach Religion.*—For the qualification to teach *Evangelical Religion*, it is required for the *second grade* that the candidate be familiar with the biblical history of the Old and New Testaments, and that he possess a thorough-going acquaintance with sacred writ; that he shall have a general biblical knowledge and a knowledge of biblical antiquities; a knowledge of the history of the ancient church in the first few centuries of the present era, and of the Reformation; that he possess an accurate understanding of the institutions of the evangelical church and its authorities, from a study of its fundamentally important writings, particularly of the Lutheran "Heidelberger Katechismus" and the "Augsburgische Konfession." He must be familiar with the distinguishing tenets of Lutheranism, with the regulation of the ecclesiastical year, and with the evangelical hymns and liturgy.

For the higher *grade* the candidate must, in addition to the preceding and to the necessary prefatory studies, be qualified in respect of biblical theology, and to expound the sacred writings, more particularly the New Testament from the original tongue. (Ability in scientific exegesis is considered important.) He must be acquainted with the developments of ecclesiastical history up to the formation of the present evangelical church, a thorough comprehension of the differences between the Lutheran and other churches and religious bodies; a knowledge of dogmatic theology ("Glaubenslehre") and of moral philosophy or ethics ("Sittenlehre"), and particularly their historical development. He must be able to found the theology on the Bible and simply and clearly expound it.

In the case of candidates who wish to qualify to teach the *Catholic religion*, the requirements for the *second grade* are :—Familiarity with the biblical history of the Old and New Testaments, theology, and with the antiquities of the Israelitish race, a thorough knowledge of the most important sections of church history, acquaintance with the basis of catholic dogmatic theology and moral philosophy, and with the catholic catechism; an inclusive knowledge of the church year, so as to lead the pupils to a spiritual recognition of the cycle of holy days, etc.

For the *higher grade*, he must be competent, in addition, to deal with biblical history and theology, to explain texts of the New Testament from the original; he must be expert in dogmatic theology and moral philosophy in respect of simply and clearly expounding catholic theology either from the positive or apologetic standpoints; he must have a knowledge of the history of the catholic church, and the development of its theory in contradistinction to other churches and religious communities, and of the significance that important facts and personalities have in the collective history of the Christian church. (See sec. 12).

5. *Qualification for Philosophical Propædeutics.*—Those who desire to qualify for the office of teaching "*Philosophische Propädeutik*," must give evidence in the general examination of having had a suitable preparation in philosophy, and their essay (not done under supervision, but at home) must discuss a subject in the province of philosophy. They must have a general knowledge of the history of philosophy, of the problems with which it deals, and an incisive knowledge of at least one of these or of one of the most important philosophical systems. They must be able to grasp clearly and definitely the philosophical questions with which it deals. (See sec. 13.)[1]

6. *Qualification to teach the Mother Tongue.*—For the *lower grade* of qualification to teach *German*, the following are the requirements, viz. :—

An accurate knowledge of the elementary grammar of modern High German, (Neuhochdeutsche Elementargrammatik); an acquaintance with the history of the literature of modern High German; an incisive knowledge of the classics of recent literature, more especially those suitable for the education of young men; an aperçu of the progress and development of modern High German literature. Besides these some familiarity with the main features of Rhetoric, Poetry, and Prosody, and with scholastically the most important ancient and Germanic legends, are demanded.

For the *higher grade* the following are required, in addition to the above, viz. :—

A sufficient command of Middle High German (Mittelhochdeutsch) to read the easier works without difficulty, and to explain them with grammatical and etymological accuracy.

A wide acquaintance with the path of development of German literature from Middle High German to recent times, and familiarity with Poetry and German metrics, as well as with the theory of Rhetoric, which is necessary for the German essay in the upper classes of the Gymnasium, are also required. The candidate may select one of the following for further examination, viz. :—(i) Acquaintance with the principal matters of historical grammar, or knowledge of the elements of Gothic and Old High German, or (ii) the qualification in philosophical propædeutics, referred to in the preceding section. (See sec. 14.)[2]

7. *Qualification for Teachers of Latin and Greek.*—The qualification for the *second grade* is :—

An accurate knowledge of Latin and Greek grammar, such practice in the written use of both languages as will give facility, suitable subjects being treated accurately and grammatically, at least in so far as Latin is concerned; also the ability to translate with some regard to style in composition. Further, there

[1] It may be mentioned that the significance of philosophy for scientific and professional workers is recognised in the University of Sydney, and the Professor of Logic and Mental Philosophy gives a course of lectures which will, as in the German gymnasium, considerably enlarge the horizon of the student, and deepen his understanding of his ordinary subjects.

[2] The higher knowledge of English is being promoted in the Faculty of Arts by the Professor of Modern Literature.

there must have been a regular and thorough reading of the classics. Sections from the authors for the Secunda of the Gymnasium are to be understood, with grammatical and etymological accuracy, and selected passages of exceptional difficulty are to be fluently translated. The candidate shall be acquainted with Roman and Grecian history, inclusive of the history of the literatures, with the antiquities, the mythology and versification, at least so far as the explanation of the authors read in the middle division (UIII—UII) demand.

The *higher grade* involves, in addition to the preceding, a co-ordinated and scientifically-based knowledge of Greek and Latin Grammar; facility in the free written use of Latin; grammatical accuracy in the written application of the Greek language. Also exercises in Latin conversation, extensive reading in the Roman and Greek classics, particularly in those that are specially used in the gymnasium courses, and scientific training in method of explanation. Acquaintance with versification as far as the poetical authors read in the gymnasium are concerned, with practice in appropriate reading of verse. Knowledge of the general development of Greek and Roman literatures, and of the periods when they flourished. A knowledge of the principal periods of Greek and Roman history; the organisation of the Roman and Greek States; the private life of the people, their religions, traditions, and philosophies are also demanded of the candidate; and, further, some acquaintance with Archæology, in so far as it is necessary to increase the interest of the treatment of the lessons. The candidates must also shew that they have acquired a general idea of the development of philology (sec. 15).

8. *Qualification to teach Hebrew.*—An accurate scientifically co-ordinated knowledge of Hebrew etymology and syntax is required, and some acquaintance with the historical, poetical, and prophetical writings of the Old Testament. The candidates must be able to read passages which are not very difficult (nicht zu schwierige Stelle) in the Old Testament, the text being pointed; such texts must be accurately understood and correctly translated. He must further shew acquaintance with the principal points of the history of the Israelites. Importance is attached to accurate form and clearness in the Hebrew handwriting (sec. 16).

9. *Qualification for teaching French.*—It is necessary for those who wish to teach *French* to have a knowledge of *Latin elementary grammar*, and of the easier Latin authors used in schools (for example, Cæsar). They must also be able at least to read and to translate the easier passages in such authors. Then for the *lower grade* the qualifications are :—

A knowledge of the elements of phonetics; accurate and assured facility of expression in the language; familiarity with the etymology and syntax, and as well with elementary synonymy; the possession of an extensive vocabulary, and turns of speech; some practice in the oral use of the language; an insight into the construction of modern French verse; a succinct knowledge of the development of French literature from the 17th century; the ability to read in a significant manner some of the finer poetry and prose contained therein; a knowledge of the most recent literature; ability to accurately translate the usual French authors into German; ability to give a description in French, free from the crudities of mere conversational style.

In the *higher grade* the qualifications are :—

In the written and oral use of the language there must be not merely perfect grammatical certainty from a scientific grounding in the grammar of the language, but a comprehensive familiarity with graceful form and propriety of expression, and further a rich versatility in the use of the language for the purposes of instruction. A knowledge of the development of the language and of its relation to Latin; a general knowledge of French literature connected with the critical reading of some of the finer works of the various former periods, and of the present time; an insight into the laws of French versification of ancient and modern times; a knowledge of the history of France in so far as that is essential for the clear explanation of the customary school authors—all these are requisite qualifications. (See sec. 17.)

10. *Qualification for teaching English.*—To teach *English* the same elementary knowledge of *Latin* is demanded as is required in the case of French. Then for the *lower grade* the following is demanded of the candidate :—

The same elementary requirements as to phonetics and actual knowledge of the language as for French. A knowledge of English literature from the time of Shakespeare onward. Other conditions as in preceding section.

For the *higher grade* the additional requirements are identical with those of the preceding section, the history of England being substituted for that of France, and other necessary changes being made. (See sec. 18).

11. *Qualification to teach History.*—The preliminary qualification to teach *History* is a knowledge of Greek and Latin, so that historical writings in those languages may be used as sources of information. Then for the *lower grade* the requirements are :—

A chronological and geographical knowledge of the chief events in the history of the world, particularly Greek-Roman, German, and Prussian history; an acquaintance with the development and government, etc., of Sparta, Athens, and Rome, and also Germany and Prussia; a knowledge of the Prussian State and German Empire governments, etc.; familiarity with the most important recent works on the history of the Fatherland.

For the *higher grade* is required :—

An accurate knowledge of the whole development of the history of the world (Weltgeschichte); an understanding of the interdependence and inner meaning of the various events; a critical knowledge of the history of governments and of civilisation in ancient, mediæval, and modern times, with relation also to the history of the Fatherland; a knowledge and grasp of the most important economical and social changes since the close of the thirty years' war; an acquaintance with the most important sources of historical knowledge, and of the fundamental principles by which their worth may be estimated; an appreciation of the value of the philosophy of history and of recent historical works (sec. 19).

12. *Qualification to teach Geography.*—For *lower grade* teaching the following is demanded of the candidate :—

Accurate knowledge of the fundamental elements in the provinces of mathematical, physical, and political geography, as well as in all matters relating to the earth's crust ; synoptical knowledge of various discoveries, and most important directions of the world's commerce at different periods ; special knowledge of the development of the German colonies ; a knowledge of the use of the globe, reliefs, and charts ; facility in using simple apparatus (Lehrmittel) to intuitively demonstrate the fundamental facts of mathematical geography ; some facility in making map-sketches.

The additional requirement for the *higher grade* is :—

Familiarity with the theory of mathematical geography, so far as this can be founded on elementary mathematics ; a knowledge of the physical and most important geological relationships of the terrestrial surface ; co-ordinated knowledge of the political geography of the present time ; synoptical knowledge of the territorial development of civilised countries and of the principal facts of population (sec. 20).

13. *Qualification to teach Pure Mathematics.*—For the *lower grade* an accurate knowledge of elementary mathematics, including analytical plane geometry, the principal properties of the conic sections, and the fundamental elements of the differential and integral calculus, are required.

For the *higher grade* is demanded, further, such an acquaintance with the theory of higher geometry, higher arithmetic, and higher algebra, higher analysis and analytical mechanics, that the candidate shall be able to work out ordinary problems within this field without assistance. (Sec. 21.)

14. *Qualification for Applied Mathematics.*—The preliminary qualification is defined in the proceeding section. The other requirements are a knowledge of descriptive (or projective) geometry as far as the theory of central projection inclusive ; facility in drawing ; a knowledge of mathematical methods in technical mechanics, especially graphical statics ; lower geodesy ; the elements of higher geodesy ; and the theory of equations of the errors of observation. (Sec. 22.)

15. *Qualification for the teaching of Physics.*—For the *lower grade* a knowledge of the most important phænomena and laws from the whole range of this science, and of the founding of these on a mathematical basis, so far as this is possible without applying higher mathematics : a knowledge and dexterity in the use of the necessary apparatus for physical demonstration in connection with school instruction are required.

For the *higher grade* a knowledge of experimental physics and its applications ; of fundamental researches in regard to the most important parts of theoretical physics ; a general review of its entire field. (Sec. 23.)

16. *Qualification to teach Chemistry and Mineralogy.*—The requirements for the *lower grade* are a knowledge of the following :—

The laws of chemical combinations ; the most important theories concerning their constitution ; the representation, properties, and inorganic combinations of the most important elements ; their significance in the economy of nature, and their importance for chemical technology ; facility in experimentation ; the most important minerals in respect to their crystalline form ; their chemical and physical properties ; their practical value, and the part they play in mountain and geological formations, especially in Germany.

The additional knowledge required of teachers of the *higher grade* is of the following :—

Incisive knowledge of inorganic chemistry ; the compounds in the province of organic chemistry, which are specially significant for physiology or technology : the most important chemical theories and methods ; facility in qualitative, and sufficient practice in quantitative analysis, with inclusion of organic elementary analysis. (Sec. 24.)

17. *Qualification to teach Botany and Zoology.*—The *lower grade* demands knowledge of the following :—

The commonest or most frequently occurring indigenous plants and animals ; and the specially characteristic forms in foreign countries (all based upon direct observation) ; the anatomy and the fundamental elements of the physiology of the human body with reference to hygiene (Gesundheitspflege) ; systematic synopsis of the vegetable and animal kingdoms ; the most important natural families ; some representatives of the lower plant world, as well as the most important orders of vertebrata and articulata ; some representatives of the remaining part of the animal kingdom and the geographical distribution ; the fundamental theory of the vegetable anatomy, physiology, and biology ; a glance at the structure and life of animals ; practice in drawing vegetable and animal forms.

For the *higher grade* the following are necessary in addition to the above :—

Thorough knowledge of the anatomy, physiology, and biology of plants and animals ; systematic review of the vegetable and animal kingdoms ; comprehensive knowledge of human anatomy and physiology. (Section 25.)

18. *Qualification for teaching Polish and for teaching Danish.*—There are two grades in each of these, and the principle of development is much the same as for the other languages. The reading in Polish takes account chiefly of the literature of the 16th century and of the second half of the 18th century. The reading in the Danish literature is from the time of Holberg [1684–1754] onward. The battle and folk songs (Kæmpeviser og Folkeviser) are read in the *lower grade*, and the candidate is examined therein. (Sections 26, 27.) [The qualifications for drawing and gymnastics are special, and will be referred to later, viz., in sections 22 and 23 of this chapter.]

19. *The theses of Candidates.*—Every candidate receives two tasks, viz., to write two theses, one for the general part of the examination, the other on one of the special subjects which he proposes to teach.

The work in connection with the examination in classical philology is always written in Latin ; and in modern languages it is written in the language concerned ; everything else is written in German.

For the preparation of both the theses a period of about sixteen weeks is allowed from the time of the allocation of the subject. This may be increased at the discretion of the Minister. If the candidate is guilty of neglect in regard to this period his examination fails, but under exceptional circumstances he may be assigned another thesis.

At the end of every thesis the candidate certifies that it is produced by himself, without any other assistance than that specifically allowed him. Should this certification be discovered to be false before the issue of the certificate, the examination is rendered null and void, but should the certificate of passing (Prüfungzeugnis) be given him before the discovery, disciplinary consequences follow thereupon.

The examination papers remain with the general records of the Examining Commission, but the publication or copying of these theses is allowed at the expense of the author. (Sec. 28.)

The work done under supervision ("Klausurarbeiten") lasts uniform periods of time, never more than 3 hours. (Sec. 29.)

20. *Practical Tests of Candidates, etc., in the Theoretical Examination.*—Efficiency in the handling of physical and similar apparatus is tested by the development of some easy experiments, and expertness in chemical work by the making of an analysis. The efficiency in the practical use of apparatus for intuitive teaching (Anschauungsmittel) is similarly determined. In respect of drafts of sketch maps, geometrical drawings, simple outlines, etc., of plant and animal forms, the candidates submit drawings done at home. (They can, of course, be tested in any way the Examining Commission pleases.)

In the oral part of the examination, neglect of the candidate to appear at the appointed time cancels his examination.

The order of merit of a pass (1) "Gegnügend bestanden," (2) "Gut bestanden," or (3) "Mit Auszeichnung bestanden," or, say, sufficient, good, excellent. In case of failure, it is decided whether the candidate shall be required to return for the whole examination ("Wiederholungsprüfung") or whether he may be allowed to pass a small supplementary examination (Ergänzungsprüfung.)

Whether he passes or not, the candidate is given a certificate (Zeugnis), shewing his full name, the status and residence of his father, the date and place of his own birth, his religion, his education, when and where he passed his maturity examination, at which University, for how long, and what subjects he studied there, when he applied to be examined, when and how he passed, and when and where he fulfilled his military service.

A candidate may extend his qualifications by a further examination ("Erweiterungsprüfung") at any time within the six years following on that in which he passes. (Sec. 38.)

21. *Recognitions of the Examinations for Secondary Teachers in Various Parts of Germany.*—On 14th August, 1889, an important step was taken to secure wide recognition of the "Prüfung für das höhere Lehramt." The Prussian Ministry on the one side, and the Governments of the kingdom of Saxony, of the Grand Duchies of Baden and of Mecklenberg-Schwerin, of the grand ducal and ducal Saxon states, of the Duchy of Brunswick, and the Governor (Statthalter) of Alsace-Lorraine on the other, agreed to mutually recognise the "Prüfungskommissionen" of Leipzig, Karlsruhe, Rostock, Jena, Braunschweig, Strassburg i. E, and those of Prussia as of equal standing, and that the certificates issued by anyone of these should be recognised by all the others. Other decrees deal also with the matter (Erlass v. 17th September, 1898, Verfügung v. 30th September, 1899, etc.)

The details are of small importance, the point to be noticed is the attempt to secure uniformity throughout the empire.

22. *Special Subjects. Qualification for Teachers of Drawing.*—Drawing and gymnastics do not fall quite into the same category of subjects as those previously enumerated. There is, however, practically the same distinction as to the class of school for which the qualification is sought. The latest regulations regarding *teachers of drawing* are those for 31st January, 1902.[1] The scheme of qualification may be set forth as follows :—

(i) The qualification for teaching drawing in *Folk* and *middle schools*, as well as in higher boys and girls' schools (*secondary schools*), and in institutions for the professional education of male and female teachers (Lehrer-und Lehrerinnen Bildungsanstalten), is obtained through the passing of an examination.

(ii) Such examinations are held once a year in Berlin, Breslau, Königsberg, Kassel, and Düsseldorf, and, as a rule, at the close of the summer semester, by qualified examining bodies (Prüfungs Kommissionen) meeting for this purpose.

(iii) The dates of the examination are duly published.[2]

(iv) Applications for examination have to be made in writing and received officially not later than 1st June each year. Such applications must indicate whether the examination is intended to qualify for Folk and Middle schools, or for the higher schools, including higher girls' schools, and also institutions for the professional education of male and female teachers.

(v) The qualification to teach drawing in a higher school includes, of course, the right to teach the subject in the lower schools.

(vi) With the application the following documents are to be forwarded, viz. :—(1) Date and place of birth ; (2) short description of former employment ; (3) certificates of the school education received and of any examinations passed ; (4) testimony that the candidate has made an extensive study of drawing and painting (for this purpose the applicant's student sketches are required) ; (5) testimony as to moral conduct.

(vii)

[1] "Prüfungsordnung für Zeichenlehrer und Zeichenlehrerinnen in Preussen.

[2] In the January number of the "Centralblatt für die Unterrichtsverwaltung" as well as in the "Amtsblätter der königlichen Regierungen.

(vii) In the case of a candidate who already possesses the teaching qualification for the elementary schools, or who has completed his six years in a Gymnasium, Realgymnasium, Oberrealschule, Progymnasium, Realprogymnasium or Realschule, or who has passed through the highest classes of a higher girls' school of the first grade, or who has the qualification of a teacher of gymnastics or manual training, or as a teacher of domestic economy, unconditional admission may be allowed at the discretion of the "Minister der Unterrichtsangelegenheiten."

(viii) The male candidates must be at least 21 years of age, and the female candidates at least 19.

(ix) In the examination the candidate must give evidence (*a*) of the possession of the necessary skill in draftsmanship; (*b*) of an accurate eye for form, tone, and colour; (*c*) of the possession of the capacity to represent things spatially; (*d*) of well developed form-memory; and (*e*) that he is qualified to *teach*.

(x) The examination for higher schools, including higher girls' schools and schools for the professional education of teachers, includes the following, viz. :—

(1) Drawing from the living model (the head).
(2) Drawing from nature, leaves, flowers, fruit, branches, whole plants, muscles, the skull, stuffed animals, and other natural forms.
(3) Drawing utensils, vessels, plastic ornaments, parts of interiors and of buildings.
(4) Painting from Nature as in (2), also butterflies, and things mentioned in (3).
(5) Drawing on the black-board from models and from memory anything mentioned in (2) and (3).
(6) Linear drawing. In this connection it may be mentioned that the candidate must shew familiarity with the most important rules of parallel projection, with the construction of shadows and perspective generally, and must be able to use the drawing pen and ink technically.
(7) Methodology.
(8) History of art.

(xi) Touching the question of the methodology, the candidate will be examined in school-technique, in so far as it directly concerns the course of instruction in drawing. This will include a knowledge of the official circulars, etc., which specially relate to the programmes of instruction in the subject of the adjuncts of instruction of the general organisation and equipment of the rooms for teaching the subject, and of the properties and use of various drawing materials.

(xii) In connection with the examination in the history of art, it may be said that it will cover the chief periods of the general development of art, inclusive of the 19th century. It is particularly required that the candidate shall understand the most important works of the great masters and epochs, that he shall possess clear ideas in regard thereto, and be able to express them significantly.

(xiii) In the examination for the Folk and Middle Schools, the drawing from the living model (see, x, (1)] and the history of art [see x, (8)] are not required. Further, the requirements of [x, (4)] are considerably reduced; the methodology is restricted to the needs of the elementary schools; and the linear drawing is confined to the following, viz. :—

(*a*) Skill in the use of mathematical instruments; (*b*) familiarity with the exercises of plane geometry; and (*c*) with the representation of simple bodies from different points of view; (*d*) with sections and developments; and (*e*) with the simplest ideas of perspective.

(xiv) A candidate may, if he so wishes, pass an additional examination (*a*) in figure-drawing, or painting from the living model, or in anatomical drawing; or (*b*) in landscape drawing or painting from nature; or (*c*) in modelling from nature.

(xv) In the latter case the certificates given him will shew the fuller qualification.

(xvi) The examination for the *upper grade* lasts not more than five days, and for the *lower grade* not more than three and a half days, the details being arranged by the Examining Commission; and, when special reasons indicate it as sufficient, the Commission may reduce the examination to the undertaking of an individual work.

(xvii) The character of the pass is distinguished as "very good," good," or "sufficient." "Insufficient" is, of course, failure.

Upon the basis of the examination the certificate is drafted in the following form :—

Whereas A.B., born at (name of place), on the (day, month, year) of the (religious denomination) confession, after producing testimony as to his (her) general education before the Commission indicated hereunder, has been examined, according to the regulations of 31st January, 1902, upon which the Commission finds the following award, viz. :—

(1) Drawing from the living model (head);
(2) Drawing from natural forms;
(3) Drawing from utensils, vessels, etc.;
(4) Painting;
(5) Drawing on the blackboard?
(6) Linear drawing;
(7) Methodology;
(8) History of art.

(After *each* the character of the pass, viz. :— Very good, good, etc.)

And whereas, in addition to the above, he (she) has passed a further optional examination in figure-drawing, etc., with .....results.

A.B. is hereby declared competent to give instruction in drawing in—
[Folk and Middle Schools,] or
[Folk and Middle Schools, as well as higher schools, higher girls' schools, and institutions for the professional education of male and female teachers.]

(xviii) The certificate in this form bears the seal of the Commission, and the signature of the President, and of a second member of the Commission.

(xix) This certificate does not, however, qualify for a fixed position as drawing master or drawing mistress. Those candidates who have had no experience in a public school or in the practising school of a seminarium for teachers of drawing must pass through a probationary year, and must afford evidence during that period of pædagogic and didactic skill.

In cases of failure, a second (but final) examination is allowed at the discretion of the Minister

(xx)

(xx) The proposal to sit for examination must reach the Minister before the 1st October.

(xxi) Having regard to their sufficiency of their elementary knowledge in respect of the province of art, artists (painters), sculptors, architects, etc., who have passed the "Einjahriges Examen," may, at the discretion of the Minister, be exempted from examination.

(xxii) In regard to (2) and (3), section xvii, the exercises in the examinations may include both elements.

(xxiii) The purpose of the drawing on the blackboard is to ensure good method. The candidate must shew that, in all grades of instruction, he is competent to make sketches of the characteristic forms of objects, or to express them in intelligible outlines from memory by firm strokes on the blackboard.

(xxiv) The introduction of methodology in the examination aims mainly at ascertaining if the master can succinctly describe the course of instruction. He must understand how to set out the various objects and bring them into proper light; must be able to criticise the work of the pupils, and to indicate and explain the necessary corrections.

(xxv) The distribution of time in the examination for the higher grade is as follows, the subjects being numbered from (1) to (8), as before :—Hours, 12, 4, 4, 8 painting, and 4 sketching, 2, 5, ½, ½, = 40 hours, or 5 days.

(xxvi) The result of all examinations is communicated to the Minister of Public Instruction, and with it accompanies the following items of information :—(1) Christian and surnames; (2) position; (3) daily work; (4) religion; (5) residence; (6) nature of previous education (whether by private study or in an institution); results of any previous examinations as drawing-masters; (8) the percentages in regard to each individual subject of examination; (9) the collective result; (10) special observations.

The drawing ability is high as regards both the artistic and technical phases. The average quality of the work seen by the Commissioners shewed that the early teaching had been excellent.

23. *Qualifications for a Teacher of Gymnastics.*—In Berlin there is a Royal Institution for the Education of Gymnastic-teachers (Königlichen Turnlehrer-Bildungsanstalt), and the President of the examining board is the director of this institution. The present regulations for qualifying as teachers of gymnastics date from the 15th May, 1894 (Prüfungsordnung für Turnlehrer). There have, however, been some slight modifications since this date, viz., by the "Verfügungen, of 18th April, 1896, 7th March, 1901, and 25th November, 1901. The following is a sufficient indication of the qualifications demanded. It may be mentioned that the tendency is to demand more and more a sound scientific basis and some knowledge of the general principles of pædagogy.

(i) The following are admitted to examination, viz. :—(1) Candidates who already posssess the qualification to take part in school instruction. (2) Students, after the close of their 5th (now 3rd) semester. (3) Candidates of more than 22 years of age are admitted if they have the Maturity Certificate of a Higher School with a 6-year course, or if passed through the Obersecunda in a 9-class higher school. (Candidates who are not within the Prussian Union may be admitted if their application is transmitted through their own provincial administration or its representative in Berlin.)

(ii) The examination is held as a rule in February, and in the rooms of the Königlichen Turnlehrer-Bildungsanstalt S.W. Friedrich Strasse 229, Berlin, the date being notified through the "Staatsanzieger," as well as the "Amtsblätter" and the "Centralblatt."[1]

(iii) Applications for examinations are received at the latest up to the 1st January, and must be accompanied by the following documents, viz. :—(1) A personal statement giving a succinct account of the candidate's life occupations. The title-leaf of this is to shew his Christian and surname, place of residence, age, religion, and present occupation. (2) A medical attestation of sound health. (3) A certificate regarding his education in gymnastics. Further (4) from those who have already passed an examination as teacher :—(*a*) A certificate of these examinations; (*b*) A certificate of his past activity as teacher; or, lacking this, an official testimony as to conduct. (5) For extra-Prussian candidates :—(*a*) Certificate of birth. (*b*) Certificate as to conduct either from the University or Local Administration. (*c*) In the case of those who are not students, the school certificate as to passing the Maturity Examination or the Final Examination.

(iv) The examination consists of two parts, viz. : (i) the theoretical (written and oral) and (ii) the practical.

(v) The written examination consists in the preparation of a theme upon the subject of school gymnastics; this may form the basis of a series of questions by the Commission.

(vi) The oral examination covers the following ground, viz. :—(1) Knowledge of the most important matters in the history of gymnastics, particularly that of modern times; the problem and method of gymnastic instruction; description and development of gymnastic exercises; the question of limiting the scope of the exercises and of grouping them for pupils of different ages and of different classes in the schools; a knowledge of the literature of gymnastics and of its terminology. (2) A description of the proper gymnastic apparatus for school gymnastics and of its scheme of use; the selection and equipment of rooms for gymnastics. (3) A knowledge of the human body and its general structure; the influence of gymnastic exercises upon the organs of the body; the rules of health and their relation to the exercises of gymnastics; the most important elements of "first-aid" in the case of the more common accidents. (4) For candidates who have not passed an examination as *teachers, a knowledge of the most important and fundamental principles of education and instruction.*[2]

(vii) The practical examination covers the following, viz. :—(1) A demonstration of physical expertness in the exercises of school gymnastics; and (2) the possession of the necessary teaching skill in regard to the gymnastic exercises.

(viii) The candidates who desire qualification for teaching *fencing*, or *swimming*, will be specially examined in these subjects also.

24.

[1] Well-known sources of official information.

[2] The fact that pædagogic theory is required is worthy of special note.

24. *Gymnastic teacher's knowledge of the human body.*—Throughout Europe, teachers of gymnastics are required to know something of human anatomy and physiology. The following is from the published official requirements in the case of the German teacher. According to these, the examination is to assure his knowledge in regard to the following elements:—

(1) Succinct statements of the organs of the human body, their position and functions. (2) The human skeleton as the basis of the apparatus of locomotion. (3) The bones of the skull, in general merely. (4) The spinal column in regard to its form and structure, the sternum, the scapula, the pelvis, the limbs, the articulation of the bones. (5) The skeletal muscles. (6) The construction and activity of muscles in general. (7) The most important superficial muscles and muscle-groups, their position, and the motions which they bring about. (8) The outer skin, its structure and functions. (9) The heart and the circulation of the blood. (10) The various kinds of blood-vessels. (11) The course of the larger vessels. (12) A knowledge of the places where the great arteries may be felt externally. (13) The blood as a nourishing liquid. (14) The lymphatic vessels and lymph. (15) The lungs and the breathing muscles. (16) The breathing organs and the process of breathing. (17) The significance of breathing for the blood itself. (18) The nervous system in general. (19) The cerebrum, cerebullum, and ganglia. (20) Motor and sensory nerves; the course of the greater nerve-paths. (21) The digestive organs, their individual parts, their position and functions.

The teacher of gymnastics is in no sense a mere athlete, who, by practice, has become physically agile. He is required to understand the *physical and physiological consequences* of his exercises; and lately it is recognised also that he must know something of their *psychical consequences.* See Chapter XVII of the Interim Report, pp. 162–166, and in particular sections 4 and 14.

25. *The qualification for the Teaching of Swimming.*—The examination for the qualification to teach swimming consists of two parts, viz.:—(1) A practical examination, comprehending school-swimming in various ways—feet first and head first, "treading the water," diving, swimming under the water, rescuing drowning people, the treatment of such up to the arrival of a physician, a test-lesson with a view to ascertaining the teaching efficiency of the candidate. (2) A theoretical examination. This covers a description and an analysis of the motion of swimming, the methods of giving instruction in swimming; the equipment, maintenance, and conduct of swimming establishments.

It may be mentioned that some of the gymnasia seen by the Commissioners had very finely-equipped baths, with provision for maintaining the water at any desired temperature, both in England and on the Continent of Europe.

26. *Qualifications of Teachers in other Parts of Germany and Bavaria.*—In Bavaria, candidates for the teaching profession have to submit to a régime which, while not strikingly dissimilar from that of Prussia, is nevertheless by no means identical therewith.

Once a year a special "Prüfungskommission" meets at Munich, the members being drawn from the staffs of the higher and middle schools. Its president is a Ministerial-Kommissär.

Candidates for the authority to teach *philological historical subjects* must possess the maturity-certificate (Absolutorium) of a humanistic gymnasium, and have spent three years at a Bavarian University. For (2) *Mathematics and Physics*, they require the "Absolutorium" of a humanistic gymnasium, or of a Realgymnasium, and two years in a university or technical high school. For (3) *Modern Languages*, candidates must have the Absolutorium of a humanistic or "Real" Gymnasium, or of a recognised foreign school, and three years in a Bavarian high school.

In these subjects there is a *second section* of the examination for which further qualifications are necessary, viz., for the above subjects, (1) to (3).

(1*a*) Fourth year at the University, with attendance at lectures on Pædagogy, the History of Philosophy, etc.

(2*a*) Four years (in all) at a high school, at which seven semesters' attendance in mathematics and physics are necessary, also attendance at lectures on Pædagogy, etc.

(3*a*) A fourth year at the University for the further study of modern languages, attendance at lectures in Pædagogy and History of Philosophy, etc.

For (4) the *German language* the absolutorium of a humanistic or "Real" Gymnasium, then three years' study at a high school.

For (5) the descriptive *natural sciences*, the absolutorium of either Gymnasium; three years subsequent study at a "high school."

Other subjects do not need special mention. The details of the requirements are much the same as in Prussia. For example, in mathematics the standard includes:—Algebraic analysis and algebra, inclusive of equations of the 3rd and 4th degrees; Planimetry; stereometry; plane and spherical trigonometry; elements of the differential and integral calculus; analytic and synthethic geometry of the conic sections; the elements of descriptive geometry.

After the passing of the two sections, the candidates for the *philological historical* subjects have had since 1893 to spend one year at a pædagogic didactic course. For this purpose they may attend at the Wilhelmsgymnasium at München, the old Gymnasium at Würzburg, the Gymnasium at Erlangen, the old Gymnasium at Regensburg, the Gymnasium at Neuberg a/D. If they need it, through lack of means, the candidates may receive 60 marks a month (£3).

Travelling stipends are also granted to teachers of classical philology for the purpose of visiting the archæological institutions of Rome and Athens. Teachers of modern languages are similarly treated, so as to enable them to visit France and England.

27. *Saxony.*—The general features of the Saxon scheme of qualifications are not markedly different from those of Prussia. There is at Leipzig a "Pädagogisches Seminar," associated with the "Königliches Gymnasium" in Leipzig. After the state examination, the candidate has had to pass through a "Probejahr" since 1848.

Other matters do not call for special comment.

28. *Baden.*—Before 1867, the completion of at least three years' academic studies was the necessary preliminary qualifications for teachers of higher schools, who then had to pass a single examination held by the Higher Council of Studies (Oberstudienrat). In that year it was decreed (by the Prüfungsordnung) that every teacher must pass *two* examinations, viz., 1st, a theoretical examination, and after at least *two* years' service, a practical examination. Every philologically educated candidate had to spend two semesters (1 year) as an active member of a philological seminary; and similarly, every candidate for the natural science–mathematical classes, had similarly to become an active member of a corresponding seminary in a High School (Hochschule). Six years later three kinds of examination were held, and every candidate had to devote one year to "voluntarily" acquiring experience in one of the educational institutions of the territory in order to ensure practical efficiency. The desire, however, that the teachers should be qualified for any part of the Empire brought about a change in 1889, with the object of conforming to the Prussian regulations. (See section 21 of this chapter.) The scheme of qualification is consequently practically identical with that of Prussia previously referred to.

29. *Conclusion.*—The theoretical qualifications of the German teacher will be recognised as high. The question of the practical training in Prussia, which has incidentally been referred to, will be discussed in the next chapter.

CHAPTER XXII.

Practical Training of the Secondary Teachers in Germany.

[G. H. KNIBBS.]

1. *Introduction.*—The training of the primary teachers has been discussed in Chapters XXVII to XL of the Commissioners' Interim Report. In those chapters it has been shewn how conspicuously diverse is the Continental view and that publicly expressed by the highest officers of the Department of Public Instruction in our State as to what may be regarded as constituting a sufficient education of the teacher, and a sufficient professional training for his office. Under our system, the pupil, it was shewn, is necessarily the victim of the inexperience of the teacher. He is the subject upon which the crude teaching experiments of indifferently educated and absolutely untrained young people are made. The German and the Continental system decline to allow this in primary teaching.

In Chapter XXXIX an account was given of the organisation of the celebrated Seminarium of Jena connected with the University of Jena, a seminary that Professor Dr. Rein has made world famous.

In this chapter the training of teachers for the gymnasia and the other secondary schools of Germany is considered. It may be said that the educational principles laid down in the Chapters XXVIII, XXXV, and XXXII to XL of the Interim Report, of course equally apply here, and this chapter will reveal what is considered necessary in the case of highly educated men, who have also specialised in a particular subject.

2. *Historical Review.*—The idea that some kind of professional training was necessary, in addition to the study of subjects, arose early in Germany. To supply this the so-called Seminaries were created. The first philological "*Seminar*" was that opened by Fr. A. Wolf at Halle in 1787, an opening, it was said, that was followed by brilliant results up to the closure of the Seminary in 1806 by the Napoleonic movements. The exercises of its twelve students ("Seminaristen") consisted in interpreting the old authors, in Latin disputation, and in giving lessons[1] for some time in the upper classes of the Latin School of the Halle "*Waisenhaus*" (orphan-asylum).

With the Halle institution as prototype, other "*Seminarien*" were organised, always with the aim of forming accomplished gymnasial teachers. Such, for example, were the Seminaries in the Universities of Berlin, Königsberg, Greifswald, Bonn, etc. Actually, however, they served mainly for the scientific or theoretical education, as do many of the historical, mathematical, modern-language, and other Seminaries to be found in the Universities of to-day.

The conception that the possession in a high degree of the "*donum didacticum*" demands a thoroughly practical training had nevertheless asserted itself, even in the case of the higher class of teachers.[2] Fr. Gedike[3] followed the example of Wolf at Halle, and founded the first "*pädagogisches Seminarium*" as a State institution (Staatsanstalt) in 1788, and five seminarists each with a yearly stipendium of 150 thalers (about £22), acquired a knowledge of the *art* of teaching under him personally, and under other able conductors.

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[1] It has been previously pointed out that the German method of giving lessons in a practising school must not be confounded with that under our State school system.

[2] It is pointed out by the Commissioner that University education is not a substitute for proper professional education of teachers. Summary of Interim Report, Division III, sec. 10, p. 19.

[3] Direktor des Friedrich-Werderschen Gymnasiums in Berlin: a celebrated gymnasium visited by the Commissioners.

After many wanderings, this Seminary was finally associated with the Köln Gymnasium, and has ten members, who met twice a month, and yearly furnished a scientific and didactic work. Each taught six weeks at the Gymnasium, and received a stipend of 600–750 marks (about £30 to £37).

There were, in 1897, as many as eleven more seminaries of this type, some of which had formerly existed, but had been recently re-established and reorganised. These eleven are distributed as follows:— 1 in Berlin for modern languages; 1 in each of the towns, Breslau, Göttingen, Königsberg, Magdeburg, Stettin, Posen, Danzig, Kassel, Münster, and Koblenz. There is also a Pädagogium in Magdeburg for teachers of evangelical religion.

By a direction issued in 1826, a pædagogical trial year (pädagogisches Probejahr) was demanded of every candidate for the position of secondary teacher, notwithstanding that between 1831 and 1866 the qualifying examination itself required three test-lessons to be given for the higher classes of the Gymnasia. During this probationary year, the candidate had to teach continually in a higher school, and become acquainted with school-organisation. The dearth of teachers under this régime operated against it; it was never popular, and it generally led to the candidate becoming an assistant-teacher (Hilfslehrer), whose time was fully occupied in his actual work, and who got very little assistance or instruction from the Director or the professors or other masters. This brought about the appointment of many imperfectly equipped teachers, especially during the period 1854–1879.

It was clearly recognised that if the candidate was much occupied in teaching, he was in no adequate sense being trained in practical pædagogy,[1] for no one who really understands the question will confound mere practice in teaching with systematic training to teach.

In the beginning of the eighties of last century, some significant experiments were made in regard to a thorough and rational system of securing the highest professional efficiency of secondary teachers, especially in the "Franke" institution at Halle. This led to the issue of the circular of February, 1890, (Cirkularerlass vom 21 Februar, 1890), by the State authorities, which was followed a little later in the same year by regulations for the practical qualification of candidates for the higher teaching-office ("Ordnung der praktischen Ausbildung der Kandidaten für das Lehramt an höheren Schulen," *vide*, Preuss. Centralbl., 1890, pp. 272 ff., and 1892 pp. 612 ff.) A large number of so-called "*Gymnasial. Seminaren*" were created. In 1892 there were no less than forty, with 197 candidates in Prussia alone. All these candidates were supposed unconditionally to devote two years to the practical study of teaching, of which period the first year was to be in the Seminarium (ein Seminarjahr) and the second in probationary teaching (ein Probejahr).

The "Seminarjahr" was to be spent either in an existing pædagogical seminary or in a particular higher teaching institution, viz., one in which the methodology of special subjects could be learnt, model lessons could be given, and some experience in the conducting of a school could be acquired. The following "Probejahr" developed and confirmed the practical knowledge.

The organisation of the seminarium (Seminar-Einrichtungen), as it stands to-day, depends on the decree ("Verfügung") of 5 April, 1890; and the detailed regulations controlling the whole scheme of practical qualifications, upon an order of 5th March of the same year (Ordnung der praktischen Ausbildung, etc. See above)[2].

All modifications since have been of a minor nature only.

3. *Scheme of Practical Training—The Seminarial Year.*—The scheme of the 15th March, 1890, with all its subsequent modifications, is as follows[3]:—

(i) The practical training must last two years, the first of which shall be the seminarium year and the second the probationary year.

(ii) These years are occupied in the manner explained in the last section.

(iii) Candidates are to notify the proper Provinzial-Schulkollegium (Provincial School-board) at least four weeks before the commencement of the summer or winter semester.

(iv) In case too many candidates apply to enter a particular seminary, the Minister of Instruction (Unterrichtsangelegenheiten) can assign some to other seminaries. The candidates are usually divided into groups of *six* for this purpose.

(v) Twice a year the "Provinzial-Schulkollegium" satisfies itself that the candidates[4] are making reasonable progress in respect of method, teaching power, etc. Candidates about whose moral blamelessness there is *considerable* doubt may be excluded at the pleasure of the Minister. Change during the "Seminarjahr" from one institution to another is not permitted.

(vi) With the exception of the vacation period, at least two hours weekly are devoted to pædagogic discussions, under the presidency of the Director or of a teacher nominated by him. Other teachers may be allowed to take part in these at the discretion of the Director.

(vii) The principal subjects for discussion are the theory of education, theory of instruction, their application to the work of the higher schools, especially as regards the course of instruction in the subjects selected by the candidates, the whole being treated with historical regard to important representatives of modern pædagogy (viz., since the beginning of the 16th century).

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[1] Contrast this with the employment of very immaturely educated young people, in full charge of classes, and teaching all day long; this, too, before the mental horizon has been enlarged by wide reading or contact with cultured men.

[2] There have, of course, been modifications, *e.g.*—(*a*) Verfügung v, 9 Mai, 1891; (*b*) Verf. v, 10 Dezember, 1891; (*c*) Verf. v, 29 Dezember, 1892; (*d*) Verf. v, 28 Juli, 1892; (*e*) Verf. v, 24 Oktober, 1892; (*f*) Verf. v, 1 Juni, 1893; (*g*) Verf. v, 13 Oktober, 1893; (*h*) Verf. v, 23 Februar, 1894; (*i*) Verf. v, 22 März, 1895; (*j*) Verf. v, 11 März, 1897; (*k*) Verf. v, 7 Juli, 1897.

[3] The numbers (i), (ii), etc., are not numbers in any regulations, nor has any attempt been made to translate the regulations. The numbers are simply for convenient reference, and the subject-matter gives an idea of the method.

[4] After acceptance in the Seminarium, the candidates are known as seminarists.

(viii) Rules are made governing the preparation of the lessons by the candidates, the criticism of the lessons given by them, both in respect of their personal aspect and intrinsic relationship to the subject treated, the fundamental principles of discipline, etc.

(ix) Brief reports are made by the Seminarists upon matters concerning pædagogy and school technique; for example, touching special points in the general programmes, the regulations for examinations, the discussions in the Prussian conferences of Directors, the official special programmes in connection with higher schools[1], the more important of recent contributions in the field of pædagogy, methods which appear to be worthy of special consideration, adjuncts to teaching (Unterrichtsmittel), apparatus, the fundamental elements of school-hygiene, and matters appertaining thereto.

(x) Three months before the conclusion of the seminarial year, each seminarist must prepare an essay on a concrete pædagogic or didactic subject assigned to him by the Director.

(xi) In the conference the determination of the order, etc., is left generally to the Chairman.

(xii) The Seminarists are regularly and practically occupied during the year at the seminary. They attend the lessons given by the Directors, and those of such teachers as he indicates, and make their own instructional efforts *under special direction* (nach besonderer Anweisung).

(xiii) The latter commence in the second quarter, and at first are kept within narrow and well-defined limits. Gradually these are extended, under the direction of the teacher of the subject concerned, and, as far as the matter will allow, are written out beforehand.[2]

(xiv) Unless otherwise decided by the Director, all the Seminarists attend the practice lessons of one of their number.[3]

(xv) The time is so divided by the Director or his appointee that each Seminarist shall, as far as possible, have 2–3 hours teaching weekly.

(xvi) Opportunity is given to the Seminarist to familarise himself with the use of apparatus and aids to teaching, particularly those for natural science and geography, etc.

(xvii) The candidates are to participate in both the work and play-hours, and also in the gymnastic exercises, and the school excursions. In this way they come into more intimate touch with the pupils.

(xviii) As far as the local organisation admits of it, the Seminarists are required to visit other teaching seminaries[4] and the Folkschools.

(xix) On the occasion of the Seminarists' attendance at the lessons of the Directors and teachers, the latter are required to explain to them the status of the class, the aim of the teaching in general, and the special problem of the moment. They also indicate its solution.

(xx) The candidate, in part immediately at the close of the lesson, and in part at the discussions which are regularly held, makes his observations upon his own effort, as to any defect he noticed in respect of the preparation, in the general drift of the lesson, in the educative handling of his subject, or in the discipline of the class, and so on.

(xxi) At the end of every month the teachers transmit their own observations and suggestions to the Director.

(xxii) As a rule all the Seminarists are present as auditors at the regular class examinations and at the discussions in the teachers' conferences; further, in so far as the pupils have come under their notice during their teaching, they have on demand to give any necessary information.

(xxiii) The Director and the other teachers with whom the Seminarists are associated, explain, when required, any matters connected with their own branches of instruction.

(xxiv) Four weeks before the close of the seminarial year, the Director furnishes the "Provinzial-Schulkollegium" a report on each candidate, based partly upon his own direct observations, and partly upon the observations of the several teachers with whom the Seminarist has been associated. This report refers to the conduct of the candidate, his activity during the year, his effort in his subjects, the status he has reached in practical professional education.

(xxv) In this report special reference is to be made to the abilities of the candidate, etc., and nothing is to be hidden touching his fitness for his selected career. For example, the report must point out any serious defects in conduct, in assiduity, or in attainment. With this report is forwarded the pædagogic work (essays) of the candidate, and his application for the "Probejahr."

(xxvi) The candidate is entitled to express his own wishes as regards the place where the "Probejahr" is to be spent, it being understood that as a rule it is to be in the same province. This, as far as possible, is taken account of in the decisions of the Kollegium.

(xxvii) Such candidates as, upon a review of the Directors' report, are deemed unsuited for the avocation of a teacher, are communicated with by the Provinzial-Schulkollegium, and are advised to abandon the career on which they have entered.

To grasp the full significance of this seminarium work, it must be continually remembered that the Seminarists are men who have already passed the maturity examination of the Gymnasium (or its equivalent), have

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[1] Here it may be pointed out that the idea of there being any disloyalty to the higher authorities in openly discussing the official opinions and doctrines concerning education, does not exist so far as the Commissioners could learn in any part of Europe. When teachers may not freely discuss the details and general outlines of an educational system, progress is at an end.

[2] See in this connection the method of the Jena Practising School, Chap. XXXIX (Interim Report), pp. 357–8 particularly I (6), etc.

[3] *Ibid*, particularly II (15)–(23).

[4] That is, seminaries for folkschool teachers, etc.

have further spent three years at the University, and have then, with their wide horizon and excellent education, *specially* qualified themselves, not for teaching anything and everything, but a very limited number of subjects.

They have still to spend a "Probejahr" under the conditions enumerated in the section next following.

4. *Practical Training.—The Probation Year.*—The candidate, having satisfactorily passed through his seminarial year, is admitted to his "Probejahr," that is, he is sent to a suitable higher school under conditions hereinafter defined. Schools with nine classes have at most three candidates, and those with less, not more than two candidates, assigned to them :—

(i) A change from one school to another is permitted only in exceptional cases, at the discretion of the "Provinzial-Schulkollegium."

(ii) The candidate is entrusted with 8 to 10 hours teaching weekly, this being done gratuitously. Such teaching has, of course, to take accurate account of his special qualification as to subjects.

(iii) His activity is under the guidance of the director (Dirigent) of the institution and its "Ordinarien" and teachers (Fachlehrer) whose classes the candidates instruct, and whose lessons they take over.

(iv) The regulation of the collective activity of the candidates is decided by the director. He is careful in this decision to afford opportunity to teach in several subjects and in more than one grade.[1]

(v) Special care is taken that candidates, whose principal subjects are natural science and geography, get ample opportunity to familiarise themselves with the use of intuitive means of instruction (Anschauungsmittel) and with the use of ordinary apparatus.

(vi) The director and the teachers whose work is taken over by a candidate, in his independent teaching, *have nevertheless to be continually present*,[2] so as to afford the greatest possible assistance in the practical education of the candidate. The taking over their work in no way relieves them from duty.

(vii) The directors (Dirigenten) clearly indicate the tasks assigned to the candidates on their entrance. They familiarise them with the disciplinary regulations of the school, and they inform them as to the drift of all communications and advices from the "Provinzial-Schulkollegium," as to their work in the "Seminarjahr."

(viii) The director takes accurate account of the conduct and activity of the candidates, he frequently visits them during lessons, and makes observations upon any blunders,[3] and, if the case require, earnestly exhorts them as to the consequences of lack of proper consideration in their work.

(ix) The other teachers are required to remain with the candidate during the lessons of the whole of the first quarter, and later at least twice monthly, to make any necessary corrections, to test and assist the candidate, *outside the lesson-hours*,[4] by making any necessary observations.

(x) Once a month, at the close of the regular conferences, the teachers associated with each candidate make their observations concerning his activity and his earnestness, etc., and discuss whatever may appear necessary in regard thereto.

(xi) Candidates may be required to give special attention to particular pupils, in order to further their progress, in which case they communicate their observations to the "Ordinarius" of the class, and obtain his advice.

(xii) The directors may indicate special lessons for the candidates to join as auditors ; require them to attend the usual class examinations, or to take part in the conferences of the teachers, and give their opinion in disciplinary matters concerning the class, subject to revision, however, by the "Ordinarius" of the class.

(xiii) When the circumstances of the school pressingly demand it, the candidate may be required to teach for as much as 20 hours weekly, at the discretion of the "Provinzial-Schulkollegium."

(xiv) For such extra services the candidate is entitled to some compensation.

(xv) When the candidate participates in the regular teaching to such an extent as this, he fully represents all necessary matters in the teachers' conferences, as would an ordinary teacher, that is, concerning the classes conducted by him, or concerning the pupils instructed.

(xvi) In order to afford evidence of their pædagogic insight, the candidates are required toward the end of the "Probejahr" to deliver to the director a report upon their own teaching activity in the institution.

(xvii) This report is transmitted by the director to the Provinzial-Schulkollegium, together with his own report upon the candidate of a character similar to that referred to in the preceding section (3, xxiv, xxv).

(xviii) The "Provinzial-Schulkollegium" then takes into consideration the two reports, viz., that for the "Seminarjahr" as well as the "Probejahr," and also any observations made by its own departmental inspectors or advisers. Judging by the whole, it declares whether the two years' practical training is satisfactory or otherwise. If satisfactory, it confers the right to an appointment.

(xix) The Provinzial-Schulkollegium officially summarises the basis of its judgment, and indicates the parts of the reports of the directors, etc., on which it is based.

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[1] It has previously been pointed out that there are three divisions each of three classes in the 9-class school—lower, middle, and upper.

[2] Contrast this with the pupil-teacher system of this State : the pupil-teacher is in charge of one class and the head master, of another, and both do independent teaching.

[3] Privately, of course. The practice of making comments on the teacher, or criticising him directly or by implication before his class, is so subversive of good discipline, that it would not be tolerated.

[4] See previous observation.

(xx) The qualification for appointment following on the satisfactory decision of the provincial school board reads as follows, according to the *Verfügung* of 10th December, 1891. The translation is as nearly as possible literal :—

[*Whereas*] the candidate for the office of higher schoolmaster, A.B. (full name to be given, *surname to be underlined*), born on the (day, month, year) at (name of birth-place), who, according to the testimony of the learned Royal Examining-Commission of (name of province), dated the (day, month, year of their certificate), possesses the scientific qualification for teaching in (the individual grades of teaching in each subjects to be stated), has, for his practical training, also completed his "Seminarjahr" in the period from (date) to (date), at the "Seminaranstalt" connected with the (name of institution), and also his "Probejahr" in the period from (date) to (date) at (name of institution).

[*Be it known*] that, upon the ground of the said duly authenticated practical training, the said A.B. is, by the authority indicated hereunder, duly recognised as

Qualified for Appointment in Higher Schools from the 1st April (or 1st October).

Certificate of qualification for appointment for the candidate A.B. for the office of Higher Schoolmaster.

Königliches Provinzial-Schulkollegium.

Dated the (day, month, year). (Seal.) (Signature.)

(xxi) This certificate has to be appended to that for the theoretical qualifications in every application for a position as teacher.

(xxii) The qualification for appointment is expressly refused, notwithstanding his previous activity, should the candidate disclose serious lack of pædagogic skill (wegen grossen pädagogischen Ungeschicks), or continued lack of industry and disregard of cautions in respect thereof.

(xxiii) It is also refused when the candidate betrays any serious moral defect or bodily frailty which would unfit him for the office of a teacher of youth.

(xxiv) The reasons of their decision are to be communicated to the candidate.

The above—(i) to (xxiv)—will give an idea of the scheme of ensuring a sound practical training for the secondary teachers of Germany.

5. *Remarks on Scheme of Qualification*.—In the Interim Report it was shewn that in Europe generally the qualification to teach in an ordinary folkschool, where the children range in age from, say, 6 to 14, demanded a better education than is required in our State, to be followed by several years' special preparation for the office of teacher, which could not be completed till the age of 18 or 19 at the earliest, as a general rule.

The secondary school teacher has charge of children or youths between the ages 9 and 18, and the requirements are :—

(1) That he shall have received a secondary education of the higher type and obtained the certificate of having satisfactorily passed through it. (He is then 18 years of age).

(2) That he shall then have spent three years at a university, specialising in the subjects he proposes to teach. (This makes him 21 years of age, *at least*.)

(3) That he shall have passed a thorough professional examination as to his theoretical qualifications to teach, in which he shall have given evidence also of teaching capacity.

(4) That after this he shall have spent one year in the study of practical teaching and school organisation under stringent supervision, and with the direct and personal assistance of able and highly educated teachers. (This brings the age up to 22 or 23.)

(5) That then he shall have spent a further year in actual teaching under the most advantageous circumstances. (He is now probably 24 years of age, *at least*.)

When all this has been achieved, the candidate is simply ready for an appointment as teacher. It should be further noted he may not even then teach boys as young as 9 years of age, though he has received the education of a German gymnasium and university. He teaches only after the most careful preparation of his lessons, for a very short time, and under, not *nominal*, but direct supervision.[1]

It may be asked whether such a system must not inevitably surpass in results those that do not hesitate to sacrifice the pupils to the crude and ill-directed teaching experiments of an untrained staff? In Germany one sees men of excellent general education, who are also University graduates, allowed to teach only with exceptionally stringent preparation. If education really makes any difference to a country, then it is easy to understand why the American visits Europe to acquire information, both of an educational and technical character, for the German teacher is both thoroughly educated and thoroughly trained.

6. *Federal Arrangement as to Practical Training*.—By a decree (Verfügung) dated 29th December, 1892, a mutual arrangement has been entered into between different parts of the German Empire, viz., between the Ministerium of Prussia and the following :—

(1) The ducal Saxon Ministerium at Altenburg.
(2) „ „ State-Ministerium of Gotha.
(3) „ Anhalt „ Dessau.
(4) Schwarzburg Principality-Ministerium at Rudolstadt.
(5) The Lippe-Principality Cabinet Ministerium in Detmold.
(6) The Senate of the free city of Lübeck.
(7) „ „ Bremen.

As to the distribution of candidates for the teaching profession, and mutual recognition, the details are of no special interest, the main point being that some sort of federal action, aiming at securing thoroughness in the higher teaching staff, is attained.

It

[1] As it is often represented that pupil-teachers teach under supervision, the difference should be noted. The pupil-teacher is practically an independent teacher, in general no more under supervision than any other, except that the head-master keeps an eye on him from time to time. The headmaster and assistants are themselves fully occupied. We hav not seen the necessity for the position of a director for each school—an absolutely essential post if the educational system is to be made satisfactory.

It will be sufficient to mention that the "Provinzial-Schulkollegien" of the following places accept candidates within the dukedoms above indicated, as shewn by the letters following:—Magdeburg (1) (3) (4); Kassel (2); Münster (5); Schleswig (6); Hannover (7).

Reference may be made to sec. 21 of the preceding chapter in regard to a similar kind of arrangement as to the theoretical part of the scheme of qualification.

There is little doubt that the organisation of German higher educational effort will soon be perfectly unified, and with advantage. Her many intellectual centres will probably maintain their effort none the less well, under the pressure of modern conditions.

7. *Conclusion.*—The German system of qualifying for the office of teacher is, as we have seen, very thorough, and without doubt has given Germany a class of teacher capable of developing her power. All those who organise the practical work of the kingdom, and who guide and assist its industrial and commercial operations, are men who have been under the hands of such teachers as have been described, and the dictum of Frederick William III, that by intellectual power Germany must retrieve what it had lost through physical, has justified itself.

In regard to the teachers themselves, it seems to be generally felt that the long preparatory career was hardly justified by the ultimate emolument and social status when compared with the possibilities of other walks of life. As to the pædagogic efficiency of the system, there can be not the slightest doubt, nor can it be doubted that the thoroughness of the educated German is the natural fruit of the system.

The difficulty of securing so highly educated a class of teachers here would be the temptation which men of the necessary mental calibre would be under to abandon teaching for other and more remunerative walks of life. The German teacher has generally the title of "Professor" conferred by the law, and his status is assured. He lives in a community where public respect for his office supports him, and where his emoluments, if moderate, are assured under a secure system.

The question of the aids which are provided to enable the German teacher to achieve his end, will be dealt with elsewhere. It will suffice here to say that all the classes of schools are well provided with teaching appliances.

CHAPTER XXIII.

System of Secondary Education in Greece.

[G. H. KNIBBS.]

1. *Historical Review.*—The troublous times for Greece, commencing in 1821, and lasting nearly a decade, mark a division between the earlier forms of Greek education and the existing forms. That period, in fact, forms educationally a sort of turning-point.

The reorganisation of the whole Greek system may be referred back to an event of the 31st March, 1827—the election of Count Johannes Kapodistrias as President of the Free Greek States. He endeavoured to establish a solid future for the people through a complete reformation of the school system. Thus, to overcome the disasters of Greece, he proposed practically the same remedy as did Frederick William III of Prussia for his country. Kapodistrias had, however, brought high-handed ideas of ruling from Russia—he having been in Russian service—and was assassinated in 1831, in consequence.

With the arrival of Otho I in Greece the work initiated by Kapodistrias was further developed. Both the Bavarian regency during the minority of the King and the King's Bavarian traditions were reflected to some extent in the organisation which he brought about. The earlier traditions of Greece, though not wholly superseded, were profoundly modified in the resulting educational system.

2. *Organisation of the Educational Administration.*—A decree of 31st December, 1836 (ὁ οργανικὸς νόμος), established a scheme of administration and general organisation which, with but slight modifications, exists even to-day. Consistently with a scheme which obtains almost throughout Europe, the highest authority for all Church and School affairs is the Minister (ὁ ἐπὶ τῶν ἐκκλησιαστικῶν καὶ της δημοσίας ἐκπαιδεύσεως ὑπουργός). The highest officer immediately under him in the Ministerium is the State Under-Secretary (ὁ γενικὸς γραμματεὺς τοῦ ὑπουργείου), who is in charge of the general business in the administration of higher school affairs.

Greece is divided into sixteen "departments" (*νομοί*); in each there is a School Commission,[1] with certain rights of supervision over the schools at the seat of every Nomarch (ὁ *νομάρχης*). Two members elected by the Communal Council from among the educated people of the place (doctors, advocates, superannuated teachers, etc.). These, together with the prefects as presidents, constitute the Commission. Although the law would appear to make their office significant and extensive, it is actually very limited.

Greece has not adopted any system of regular inspection and supervision of the schools, but from time to time special visitations are arranged by the Ministerium, the inspection being undertaken by University Professors. The object of these visits is rarely pædagogic however. For the most part, the general condition of the administration of the school system can hardly be regarded as satisfactory.

The foundation of the whole Grecian system, is the *Elementary School.* Lancaster's monitorial method of instruction was not wholly unknown, hence the name "mutual-teaching schools' (*ἀλληλοδιδακτικὸν σχολεῖον*). Later, this organisation was improved. At the present time the elementary school is known as the "*folk*" *or demotic school* (*τὸ δημοτικὸν σχολεῖον*).

From this, the pupil goes on to the "*Hellenic School*" (*ἑλληνικὸν σχολεῖον*) a sort of Middle or Burgher School, and at the same time a Preparatory School for the Gymnasium. Thence he may pass to the *Gymnasium proper* (*τὸ γυμνασιον*), where the "humanistic" education, commenced in the Hellenic School, is continued.[2]

The duration of the courses of study in these three types of school is as follows:—In the first or demotic school the pupil spends four years. The three following years are spent in the Hellenic School. The Gymnasium period, which follows thereupon, is four years. In order to pass from each school to the next above it, a qualifying examination must be passed at the close of the preceding course.

Though both the Hellenic school and the gymnasium are humanistic schools, their teachers have different rank and are differently organised.

3. *The Teaching Staff.*—The Hellenic schools are, if complete, under the direction of a "Scholarch" (ὁ *σχολάρχης*), or when it is small—consisting of one or two classes—it may be in charge of a teacher simply. The Gymnasium is presided over by a Director or Gymnasiarch (ὁ *γυμνασιάρχης*), at least if it have four classes. When complete the gymnasia are known as "*πλήρη γυμνασια*," but when consisting of three, or of two classes, they are known as "*ἡμιτελῆ γυμνάσια*" or "*ἡμιγυμνάσια.*" In the latter case an ordinary gymasium teacher may preside over them. The gymnasial teachers (*καθηγηταὶ τῶν γυμνασίων*) whose rank is higher than the teachers in the Hellenic school have the equivalent of the title professor. The teachers of gymnastics, caligraphy, and drawing are teachers merely for the respective subjects, and are known as "*οἱ διδάσκαλοι τῶν τεχνικῶν μαθημάτων*" (*τῆς γυμναστικῆς, τῆς καλλιγραφίας, τῆς ἰχνογραφίας*). The teachers of the Hellenic schools, "*οἱ διδάσκαλοι τῶν ἑλληνικῶν σχολειῶν*" or "*ἑλληνοδιδασκαλοι,*" are divided into three classes or categories, (viz., "*πρωτοβάθμιοι,*" "*δευτεροβάθμιοι,*" "*τριτοβάθμιοι ἑλληνοδιδάσκαλοι*"), according to the result of the examination for their official position. Probationary and assistant-teachers are unknown.

Religion is generally taught by the respective teachers; very rarely by special teachers or theological candidates. The local ecclesiastics stand in no relation whatever to the school system or its religious instruction.

Gymnasial teachers are occupied in giving lessons from 18 to 21 hours weekly; the Hellenic school teachers and the scholarchs from 24 to 30 hours; the directors (gymnasiarchs) about 12 hours per week.

The gymnasiarchs and scholarchs under whose immediate jurisdiction the institutions stand, preside over conferences of the professors and teachers in regard to the time-tables, the inner organisation of the school, and the school discipline. Most matters are determined merely on the votes, but matters of importance are referred to the Minister. Text-books are selected by a special Commission nominated by the Minister, and not merely at the Conferences of Professors and Teachers.

4. *Qualification as Secondary Teacher.*—Students of Philology who have passed through a two years' course at the University, have the necessary preliminary qualification to submit themselves for examination by a commission as to their fitness as teachers. This commission consists of University professors. According to the results of their examination the candidates receive a certificate as teacher of the 1st, 2nd, or 3rd class, available for appointment in the Hellenic Schools. No probationary period whatever is necessary. This examination is in no way severe. As a rule, a little Xenophon is translated into modern Greek, and a so-called "Thema" (*Θέμα*) is required, namely a translation from modern into ancient Greek. In Latin, simple translation from Cæsar into Greek is all that is required.

The Scholarchs as well as the gymnasial teachers must be either doctors or candidates (*οἱ προλῦται*) of philology. Doctors of the Physical Mathematical Division, of the Faculty of Philosophy, and candidates for Theology, are also admitted for examination for the office of Principal for the Hellenic Schools. After passing the doctorate examination, the gymnasial teacher must serve for two years as a Scholarch, but then he may be appointed to teach in a Gymnasium without any special practical examination, or in fact any State examination whatever. For the principal subject, namely, the Greek language, every class has its own proper teacher. The mathematical instruction for the whole four classes devolves upon one teacher, while other subjects are shared among the teachers. In some gymnasia the instruction in Latin and French, and sometimes also that in history, is taught by special teachers.

In most gymnasia the whole of the subjects of instruction must be taken by the three classical and one mathematical teacher, which with the Gymnasiarch make up the collective teaching staff.

The staff of the Hellenic schools consists uniformly of the Scholarch and two other teachers. The Gymnasial Directors are elected from among the Gymnasial teachers who have rendered five years' service.

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[1] An instance of the persistence of an element of the old régime and the autonomy of the government of the School is evidenced in this Commission or local Ἔφοροι, cf. the Ephori of Sparta.

[2] A compendium of the organisation, laws, royal decrees, ministerial regulations, etc., may be had in three volumes entitled:—*Ἀνωτέρα καὶ μέση ἐκπαίδευσις ἤτοι συλλογὴ τῶν διεπόντων τὴν ἀνωτέραν καὶ μέσην ἐκπαίδευσιν νόμων, βασιλικῶν διαταγμάτων καὶ ἐγκυκλίων του ἐπί τῶν ἐκκλησιαστίκων καὶ τῆς δημοσίας ἐκπαιδεύσεως ὑπουργείου ἀπὸ τοῦ* 1833–1893 *ὑπὸ Στεφάνου Μ. Παρίση. Ἐν Ἀθηναις.* (Higher and middle education, or a collection of the statutes, royal decrees, circulars, concerning higher and middle education, etc., etc., from 1833–1893. By Stephen M. Paris, Athens).

5. *Curricula.*—The old programme, established in 1836, underwent a comprehensive revision in 1884, and again in 1888. The curriculum of the elementary school may be ignored. The lowest class of the Hellenic School (Class I) may be attended by pupils possessing the "Leaving Certificate" of the elementary school.

The general aim of the instruction and the function of individual subjects is determined by the law of 18th January, 1836, and also by latter ministerial regulations and royal decrees. The so-called "Humanistic" education has been regarded as the proper foundation for general education; but the Latin language and literature is nothing like so earnestly studied as in the German classical gymnasium. In Ancient Greek itself, the main exercise in every class is the preparation of an ordinary explanatory translation (*ἡ ἐξήγησις*) of the texts read, with the application of the relevant syntactical rules. Ancient Greek is said to be not written as well as Latin is written in the German Gymnasium.

Greek is commenced with a grammar and reading-book. The one book serves for the whole three classes of the Hellenic School as well as for the lowest class (I) in the Gymnasium. The first year (Class I) is devoted to etymology; the verbs in *μι* are excepted; the general rules are very few. The reading-book or Chrestomathy (*χρηστομαθεια*), contains philosophical rules and apothegms (*γνῶμαι και ἀποθέγματα φιλοσόφων*) Æsop's Fables, selections from Apollodorus, Plutarch, Diogenes, Laertius, Athenæus, and selections also from the anthology of Stobæus. About thirty pages are read.

In Class II, Xenophon's Anabasis is read; the grammar is continued.

In Class III selections from the Lives of Plutarch, etc. (Themistocles or Aristides) about forty pages, continuation and end of grammar, and the simplest elements of syntax.

Latin commences with the etymology (the irregular verb being omitted) and the reading of simple sentences from a special reading-book.

In the lowest class (I) of the Gymnasium, Xenophon's Memorabilia, Isocrates, or Lysias are read, about eighty pages. Xenophon (Anabasis) or Lucian are the authors for cursory reading. Applications of grammar or syntax complete the critical work.

In Latin, the etymology is extended, and not less than twenty pages of Nepos is read. In Class II, the historical part of Thucydides is read, Lycurgus, Isocrates (the Panegyricus or Areopagiticus) and also Homer's Odyssey, at least ninety pages are read. Arrian and Lucian are the authors for general or cursory reading; grammar and syntax are studied.

Latin, at least twenty-five pages. The grammar and syntax of the cases.

In Class III, Thucydides, the Orations; Demosthenes (the Olynthiacs and the Philippics, or the Peace, contra Leptinem); Plato, the Apology, Crito, Laches, Charmides; Homer, the Iliad, at least 100 pages. Herodotus for general reading.

Latin.—Livy (I–VII) and XXI–XXVII); Sallust (bell. Catil.) Cicero, in Catilinam, I and II; in Verrem IV s. de signis, pro Sulla, de leg. Manil., etc., etc.; Ovid, the Metamorphoses, at least forty pages. Syntax.

In the highest class (IV), Thucydides, Plato; Gorgias, or Protagoras; Sophocles, Euripides, Theocritus, Homer, and Plutarch's Lives for general reading.

Latin:—Cicero, pro Sestio, Philipicæ I, II, pro Milone, etc., etc.; Tacitus (Vita agricolæ); Virgil, the Æneid; Horace, the Odes; in all not less than fifty pages. For cursory reading Lhomond, de Viris illustribus urbis Romae.

This will give a general idea of the grade of reading in Greek in Latin.

The curricula of the Hellenic School and Gymnasium are as hereunder:—

Curriculum of the "Hellenic School," in Greece.

Subjects.	Classes and Hours per Week.			
	I.	II.	III.	Totals.
Religion	2	2	2	6
Ancient Greek	8	9	9	26
Modern Greek	4	2	2	8
Latin	...	...	3	3
Arithmetic	4	3	2	9
Geometry	...	...	1	1
History	2	2	3	7
Geography	2	2	2	6
Natural History	...	2	2	4
French	...	3	2	5
Caligraphy and Drawing	3	2	1	6
Gymnastics	3	3	3	9
Totals	28	30	32	90

Curriculum of the Greek Gymnasium.

Subjects.	Classes and Hours per Week.				
	I.	II.	III.	IV.	Totals.
Religion	3	2	1	...	6
Ancient Greek	12	12	12	12	48
Latin	3	4	4	4	15
Mathematics	3	4	4	3	14
Cosmography	...	...	...	2	2
Natural History	2	2	...	...	4
Physics	...	...	3	3	6
History	3	3	3	3	12
Geography	2	...	...	...	2
French	3	3	3	3	12
Psychology and Logic	...	...	1	1	2
Gymnastics	3	3	3	3	12
Totals	34	33	34	34	135

The Realgymnasium or practical Lyceum (*πρακτικὸν Λύκειον*) has made its appearance in Greece. It is entered from the Hellenic school and has four gymnasial classes, but without Latin. Its main purpose is to give a more fundamental mathematical education than is possible in the Classical Gymnasium; and it prepares its pupils to enter the Physical Mathematical Division of the "Faculty of Philosophy," or the Polytechnical and the Naval School, and the School of Cadets. The Maturity Certificate is also available for the Faculty of Medicine; and if an examination in Latin be passed, the candidate is matriculated for the other Faculties of the University.

The number of hours of instruction in Greek is more limited; mathematics and French increased. Algebra and Trigonometry and also Drawing are better learnt than in the Classical Gymnasium. Descriptive and Analytical Geometry, Chemistry, and Mineralogy are learnt. The curriculum is as hereunder:—

Curriculum of a Greek "Realgymnasium."

Subjects.	Classes and hours per Week.							
	I.	II.	III.	IV.	V.	VI.	VII.	Totals.
Greek	12	11	10	10	10	10	8	71
Religion	2	2	2	1	2	...	...	9
Geography	2	2	2	2	2	...	...	10
Cosmography	...	...	...	...	...	...	2	2
History	2	2	2	3	3	3	2	17
French	4	4	4	5	5	4	4	30
Arithmetic	3	3	4	5	...	...	3	18
Geometry	...	...	1	2	3	4	3	13
Descriptive Geometry	...	...	...	...	...	...	2	2
Algebra	...	...	...	...	3	3	...	6
Natural History	...	2	2	2	2	...	...	8
Physics	...	...	2	...	...	3	3	8
Chemistry, Mineralogy	...	...	...	...	...	3	3	6
Caligraphy	3	3	...	...	...	...	...	6
Drawing	2	2	3	3	3	2	1	16
Gymnastics	2	2	2	2	2	2	2	14
Total	32	33	34	35	35	34	33	236

There is a preparatory class for the Polytechnicum following on this; mathematics, chemistry, mineralogy, and French are alone taken.

The Director of the Realgymnasium (*διευθυντὴς τοῦ πρακτικοῦ Λυκείου*) and the teachers have to be of the same educational status as the gymnasial teachers.

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6. *Greek Schools in Turkey.*—In the Greek provinces in Turkey there are Greek schools with an organisation of a more developed character than the preceding. The administration is generally communal, and under the presidency of the *Episcopus* (Bishop) and of *Ephori*, elected by the community. In many cases, especially where the means of the community make it necessary, there are societies for promoting Greek education (*φιλοπαιδευτικοι σύλλογοι*); these contribute the necessary aid from the receipt of both regular contributions and special donations.[1]

A recently founded school in Pera, Constantinople, is the "*Ζωγράφειον*," so named from the founder Zographos. It is an eight-class Realgymnasium, with the following programme:—

Curriculum of the Zographos School at Pera.

Subjects.	Classes and Hours per Week.								
	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	Total.
Religion	2	2	2	2	1	1	1	1	12
Greek	10	10	10	10	7	7	7	7	68
History	2	2	2	2	2	2	2	2	16
Arithmetic	3	3	4	2	3	...	...	...	15
Algebra and Geometry	...	...	...	1	1	4	4	...	10
Geography	2	2	3	...	...	...	1	...	8
Mathematical Geography	...	...	...	2	...	...	...	...	2
Commercial Geograyhy	...	...	...	...	...	...	...	1	1
French	5	5	5	5	5	5	5	5	40
Turkish	4	4	4	4	4	4	4	5	33
Elementary Natural Science	...	...	...	2	...	...	...	...	2
Natural History	...	...	...	...	3	2	...	...	5
Physics...	...	...	...	...	...	...	3	2	5
Chemistry	...	...	...	...	2	2	...	1	5
Cosmography	...	...	...	...	...	...	...	2	2
Psychology and Logic...	...	...	...	...	...	2	1	...	3
Bookkeeping	...	...	...	...	...	...	2	...	2
Higher Computation	...	...	...	...	...	...	...	2	2
Commercial Law	...	...	...	...	...	...	1	2	3
Political Economy	...	...	...	...	...	...	1	2	3
Drawing	2	2	2	2	2	2	...	...	12
Caligraphy	2	2	...	...	...	...	...	...	4
Stenography	...	...	...	...	2	1	...	...	3
Totals	32	32	32	32	32	32	32	32	256

In the island of Chalki, at Constantinople, there is a residential eight-class school of the Latinless type, known as the "*ἐμπορικὴ σκολή*," (Commercial School), in which the upper classes are divided into the classical and commercial sections.

7. *Concluding Remarks.*—The Greek organisation of a demotic, followed by an Hellenic, and then a gymnasial school, is typified by those "public schools" of this State which endeavour to prepare pupils for immediate entrance into the University. Such a scheme regards the education which is suitable for the ordinary unskilled workman and the artisan as a fit and proper stage also for those who will be otherwise employed. But education is really a process of continuous elimination, by which the fitness of individuals for those occupations which demand higher qualifications is revealed. As soon as the necessary mental endowment for the higher stages of education has manifested itself, the desirableness of a transference on to a new and more difficult educational path is indicated. Hence the Hellenic school cannot be the best possible preparation both for the Gymnasium and for the ordinary callings not requiring high attainments.

A thorough organisation must make full provision for the transfer on to higher educational paths The demotic or democratic ideal is not to cast all in the same mould, but to afford the fullest opportunity for each to rise to whatever height his natural, intellectual, and moral endowment and assiduity will allow

The value of the Greek system in the consideration of the organisation of education in this State is to point out the defect of certain tendencies and developments which have already manifested themselves in the history of the organisation of public education. When public primary education is guided by the experience of primary education alone, rather than by those who possess a full and direct appreciation of the exact needs of higher education, it is liable to drift into inferior methods, for as much as its horizon is limited.

The demotic system of Greece does not compare with the systems of France, Germany, or Switzerland, judged either intrinsically or by results,[2]

Since writing the above some new programmes have come to hand; they indicate that considerable modification has taken place in the Constantinople schools.

CHAPTER XXIV.

[1] Two of the oldest are the *Σύλλογος πρὸς διάδοσιν τῶν ἑλληνικῶν γραμμάτων* (Association for the promotion of Greek education) of Athens, and the *Φιλολογικὸς σύλλογος* (Philological Association) of Constantinople.

[2] The details of the Greek organisation are on the authority of Dr. Georgios Sotiriadis, at one time a Gymnasiarch, and Dr. A. Baumeister (kaisl. Ministerialrat München).

CHAPTER XXIV.

Secondary Education in Holland.

[G. H. KNIBBS.]

1. *Introduction.*—In Chapter VI of the Interim Report, some reference was made to Primary Education in the Netherlands (see section 29, pp. 68–69). At the same time, the junior classes of the Higher Burgher Schools and of the Gymnasia were also mentioned as illustrating what kinds of education were available for children, up to, say, 14 or 15 years of age

As is well known, Holland is a country that has had some influence on English education. The pupil-teacher system, for example, it has been said, was borrowed therefrom. If so, it certainly deteriorated in translation; for while Holland never allowed the worst forms of that system to develope, England, on the other hand, did not hesitate, admittedly for the sake of economy, to sacrifice the educational well-being of children to the crude attempts at teaching of unqualified and indifferently educated teachers. During the period that the pupil-teacher system has been degrading in England, it has been improving in Holland.[1] So far as the Commissioners could see or learn, there is no such thing as either our pupil-teacher system or the English pupil-teacher system in the Netherlands. On the other hand, wherever in Holland the Commissioners saw the training of teachers in progress, or actual teaching going on, all persons in charge of classes had been educated and trained as teachers.[2]

But to return to the question of the development of Secondary Education in the Netherlands. The following is a brief review of its recent history.

2. *Brief Historical Review.*—When William I ascended the throne of Holland, the first national problem to which he gave his attention was the establishment of a fundamental reform in the domain of Higher Education. A Commission had already been appointed with this in view, viz., on the 18th January, 1814. The scheme this Commission had developed received the King's approval on the 2nd August, 1815, and constitutes the foundation of the existing school system of the Netherlands.

The laws actually governing the secondary and higher education of the present day are dated 2nd May, 1863, for Middle Schools,[3] and 28th April, 1876, for Higher Schools,[4] Universities, etc.

The so called "Latin School" was originally established on the 1st October, 1625. The instructions of twenty-three years later (1648) state that "all pupils shall at all times, not only *within*, but also *outside* the schools, practise and use the Latin language with one another, whenever it is found possible to do so." The decision of 2nd August, 1815, determined that both Latin and Greek should be invariably taught, and a little later mathematics, ancient and modern geography, ancient and modern history, and Greek and Latin methodology were added to the legal obligation. A decree of 9th September, 1826, regulated the instruction in mathematics and made the examination therein compulsory. Next to the Latin Schools stood the so-called Athenæums[5], a sort of "go-between" the University and the Gymnasium. These disappeared, passing either downward into the Gymnasium or upward into the University about 1843, the word "Gymnasium" coming into general use about this time. A little before this, schools of a more realistic type arose—viz, about 1838—and increased in number till about 1863. These were both Latinless and Greekless, but were supposed to meet the requirements of commercial men, engineers, and of officers of the military and official services. By the decree of 23rd May, 1845, examination before a "Commission" was prescribed in place of the diploma of the high schools. A decree of 4th August, 1852, however, cancelled these decisions, and the pupils could pass on to the University without any certification that they possessed the requisite preliminary knowledge. But exactly two years later this decree was itself replaced by another, according to which no Academic Degree could be taken by anyone who had not successfully passed through the Latin School or Gymnasium, or who had not passed an examination in literary subjects and in mathematics. In the fifties and sixties there was a vigorous demand for the reform of higher education, to which the well-known statesman Thorbecke lent his influence. The reformers believed that the surest foundation for studies of all kinds was the "humanistic education." On the 2nd May the existing law governing the instruction given in middle schools (middelbaar onderwijs) was passed; these schools include the Burgher Schools. On the 25th February, 1868, the Minister of the Interior (Heemskerk) put forward his scheme. The Ministry was, however, overthrown, and the new Minister (C. Fock) submitted a fresh project on the 5th March, 1869. This, however, did not become law, and the Minister resigned his portfolio. The scheme of 15th January, 1874, of his follower (Geertsema) also failed of realisation;

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[1] The monitorial system is pædagogically on the same plane as the pupil-teacher system. It had its origin in a scarcity of teachers, about 1790, its author being Dr. Andrew Bell [1753–1832]. Joseph Lancaster's [1778–1838] system was much the same, and both depend upon mere mechanical drill, and they fall immeasurably below any previous training system.

[2] To allow a candidate for teaching to watch and study teaching, and to give lessons after the most careful and exhaustive preparation, is very different from the system of our State.

[3] See—"Wet van den 2den Mei, 1863, zooals deze bij de wetten van 28 Junij, 1876, S. 143; 25 April, 1879, S. 87; 15 April, 1886, S. 64; 9 Mei, 1890, S. 78; en 28 Mei, 1901, S. 123, is gewijzigd; houdende regeling van het Middelbaar Onderwijs, met., etc.," 8ste druk; Zwolle; W. E. J. Tjeenk Willink, 1902.

[4] See—"Wet van den 28sten April, 1876, tot regeling van het Hooger Onderwijs zooals die is gewijzigd bij de wetten van 7 Mei, 1878, S. 33; 28 Junij, 1881, S. 107; 15 Junij, 1883, S. 75; 23 Julij, 1885, S. 141; 15 April, 1886, S. 64; en 9 Mei, 1890, S. 78, met, etc.," 4de druk; Zwolle W. E. J. Tjeenk Willink, 1898. Any subsequent references will be to these laws, and to the page, etc., in the quoted additions.

[5] The remark does not apply to the "Athenæum Illustre" of Amsterdam, which has been converted into a University.

realisation ; but the following Minister (Heemskerk) submitted a further scheme to the Second Chamber, which, after twenty-four sittings, was accepted on the 7th of April, 1876. The Upper House approved it, and the King gave his assent on the 28th of the same month. An important addition to the scheme was made by the decree of 21st June, 1877. The obligation of the law as regards secondary education will now be indicated.

3. *The Scheme of Secondary Education in Holland.*—Secondary education, excluding technical forms, is now given in two classes of schools in the Netherlands—viz., *Gymnasia*, in which for four years (12–16) everyone learns both Latin and Greek, and in which, for the last two years (16–18) the course is divided ; and *Burgher* and *Higher Burgher Schools*, in which the ancient languages are entirely omitted.

Pædagogically Burgher Schools stand on an altogether lower plane as compared with the Higher Burgher Schools. The *former are* adapted to the requirements of those who do not need a professional education, while the latter are entitled to be put into the category of such schools as the "Oberrealschulen" of Germany, and, as such, to be recognised with the latter as the peers of the "Gymnasien" and "Realgymnasien."

The Burgher School is really the school of the ordinary artisan and labourer.

These schools will be referred to in succession, the Gymnasium being first discussed.

4. *Legal Obligation as to Gymnasia.*—The present law prescribes that *every community of over* 20,000 *inhabitants shall equip and maintain a Gymnasium*[1] ; but of course other communities may also maintain Gymnasia. The supervision of each Gymnasium devolves upon a Communal Council, known as the College of Curators ("het Collegie van curatoren") which is responsible for the strict observance by the institution of the laws relating to education. The State Inspectors (inspecteurs) report to the Minister of the Interior (Minister van Binnenlandsche Zaken) yearly in regard to the Gymnasia. Next to these are private Gymnasia, usually denominational.

The Gymnasium is legally defined as a preparatory school for the University, in which the following instruction is given, namely :—[2]

(*a*) Greek language and literature ; (*b*) Latin language and literature ; (*c*) Netherlands language and literature ; (*d*, *e*, *f*) French, High German, and English history ; (*h*) Geography ; (*i*) Mathematics (wiskunde) ; (*k*) natural philosophy (natuurkunde) ; (*l*) Chemistry (Scheikunde) ; (*m*) natural history. Instruction may also be given in Hebrew and gymnastics.

The instruction in the Gymnasium is given in a six-year course[3] according to a general programme—hereinafter given—and commences when the pupil is about 12 years of age.

5. *Organisation of the Gymnasium Teaching Staff.*—The head of every Gymnasium is the Rector (rector), who, together with his representative the co-Rector (conrector),[4] must possess the Doctor's Degree in classical philology. Other teachers in the Gymnasium bear the title "*leeraar.*"[5] The Gymnasia may receive a subsidy from the State. When this is the case, the election of any teacher must have the sanction of the Minister. A teacher can be suspended only by the Burgomaster (burgemeester) and the aldermen (wethouders).[6]

The dismissal of a teacher can be effected only by the Communal Council (gemeenteraad) acting in concert with the Burgomaster, Aldermen, and Inspector.

Gymnasium teachers, in cases where the community is obliged to maintain the Gymnasium, have a right to a pension paid by the State, in accordance with a system of Pension Regulations determined by the communal officials ; provision is also made for their widows and orphans.

The hours of obligatory lessons required of the teacher are very different in various parts of Holland. For example, in 's Gravenhage (the Hague) the hours per week are the following, namely, Rector, 8 ; co-Rector, 17 ; teachers of classical languages and Dutch, 17–21 ; French, 22 ; German and English average about, 15 ; Geography and History, 21 ; mathematics, 19, etc.

Their emoluments to some extent reflect this. The relative salaries, for example, are, making that of the Rector the standard of reference :—Rector, 100 per cent. ; co-Rector, about 90 per cent. ; Classical Teachers, 85–50 per cent. ; natural history, 60–45 per cent. (say) ; physics (at 's Gravenhage, 8 hours per week), 35 per cent. to 25 per cent. The last is more at Amsterdam.

6. *Qualification for Gymnasium Teachers.*—The qualification for teaching in a Gymnasium involves the possession of a certificate of conduct from the communal authorities. This certificate must be obtained from the Commune in which the last two years have been spent. It involves also the following academical qualifications[7] :—

(*a*) *Greek and Latin* :—Degree of doctor in classical literature.
(*b*) *Dutch* :—Degree of doctor in Netherlands literature.
(*c*) *French, High German, and English* :—The same qualification as for middle schools—*i.e.*, a diploma obtained by passing a special examination before an examining commission.[8]

(*d*)

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[1] In elk gemeente, waar de bevolking twintig duizend zielen te boven gaat, wordt door het gemeentebestuur een gymnasium opgerigt of naar de voorschriften dezer wet ingerigt en in stand gehouden.
In andere gemeenteen kan een gymnasium opgerigt worden. Hoofdstuk I. C., Wet, Hoogere Onderwijs, etc. Two places (Helder and Tilburg) are excepted for special reasons.

[2] Gymnasia zijn instellingen, voorbereidend tot universitair onderwijs. Hoofdstuk I. C. Wet Hoogere Onderwijs, etc.

[3] Het onderwijs aan de gymnasia wordt gegeven in eenen zesjarigen cursus, in overeenstemming met een algemeen leerplan, etc., etc. Hoofdstuk, I, 7, *op. cit.*

[4] Hoofdstuk I, § 2, 14, *op. cit.*

[5] The male and female teachers of the elementary schools are known as "Onderwijzers," "Onderwijzeressen," *i.e.*, instructors, instructresses. The higher class of teacher is "Leeraar," *i.e.*, teacher. The teacher in a University is a "Hoogleeraar," *i.e.*, high-teacher, or professor.

[6] Some of the municipal schools of America, it may be remarked, exhibit a similar feature.

[7] *Vide*, Wet van het Hoogere Onderwijs, Hoofdstuk I, § 2·16, p. 12.
Vide also, Web van het, Middebaar Onderwijs, Titel VI. 77, p. 38.

(d) History :—The doctorate as in either *(a)* or *(b)*.
(e) Geography :—Degree of doctor as in either *(b)* or in *(f)*, next following.
(f) Mathematics and natural philosophy :—Degree of doctor in mathematics and astronomy, or in mathematics and natural philosophy.
(g) Chemistry :—Degree of doctor in chemistry.
(h) Natural history :—Degree of doctor in Geology and Mineralogy or in Botany and Zoology.
(i) Hebrew :—Doctorate in theology, or in Semitic literature.
(k) Gymnastics :—Qualification as in middle grade of instruction.

The Rectors and co-Rectors are invariably required to possess the degree of doctor in classical literature.

The teachers of the Gymnasia are appointed by the communal authorities, with, however, the approval of the Minister in cases where the Gymnasia receives Government subsidy.

7. *Private Gymnasia.*—Private higher schools are allowed in Holland, and the law makes provision for them[1]. They are required to inform the Minister, to submit a copy of their regulations, and to transmit annual reports. They are free as regards their curriculum, etc.

Among these is the "Noorthij" school at Voorschoten, a boarding school much of the type of the English "Public School," and founded by Petrus de Raadt. It has two groups, the second having three sections. The first group consists of those who are being prepared for the University; the second group, of those *(a)* who wish to embrace a commercial career; *(b)* a career in the army, navy, or civil service; *(c)* who desire a general education, with Latin.

The amount of instruction is to some extent varied to suit the individual, the scheme being to individualise the instruction as far as possible.[2] The school fell into disrepute on the development of the Gymnasia and Higher Burgher Schools, but it was resuscitated in 1888, and is now a school of repute.

8. *Curriculum in the Dutch Gymnasia.*—The following is the curriculum in the Gymnasia of the Netherlands :—

Curriculum in the Gymnasia of the Netherlands.[3]

Subjects.	Classes and Hours per Week.											
	I.	II.	III.	IV.	V.			VI.			Totals.	
					Hum.	All.	Real.	Hum.	All.	Real.	Hum.	Real.
Greek	8 | 5	6	6	7	2	4	...	3	4	...	32	27
Latin	8	6	6	6	3	5	...	4	4	...	42	35
Dutch	3	2	2	2	...	2	...	...	1	...	12	12
French	4	2	2	2	...	1	...	...	1	...	12	12
German	...	0 | 3	2	2	...	2	...	...	1	...	9	9
English	...	...	3	3	...	2	...	...	1	...	9	9
History	4	3	3	3	1	1	...	1	2	...	18	16
Geography	3	2	1	...	...	...	...	...	1	...	7	7
Mathematics	4	3	3	3	...	2	3	...	2	3	17	23
Physics	...	...	...	...	...	2	1	...	2	1	4	6
Chemistry	...	...	...	...	...	...	1	...	...	1	...	2
Natural History	2	2	...	...	...	...	2	...	...	2	4	8
Total	28	28	28	28	27	28	28	27	...	26	166	166

NOTE.—In Class I, 8 hours per week for part of year; 5 hours for remainder. Similarly as regards 0 and 3 in Class II.

In the above programme, "Hum." denotes "Humanistic" and "Real" denotes "Realistic," in Classes V and VI, there being, however, up to this point no distinction between the two branches of education; in other words, in the Netherland system the Gymnasiasts take both Greek and Latin equally until they are 16 years of age, and all take some up to 18. The only difference between the two courses is

[1] Van het bijzonder hooger onderwijs. Wet, etc. Titel III, pp. 33-36. § 99 107.
99. Het staat aan ieder Nederlander, ieder vreemdeling, die de bij art 3 bedoelde vergunning bezit, elke erkende vereeniging en ieder Kerkgenootschap vrij eene bijzondere school van hooger onderwijs te openen, onder voorwaarde dat de oprigter vooraf daarvan kennis geve aan het gemeentebestuur en aan. Onzen Minister van Binnenlandsche Zaken, met overlegging van de reglementen of statuten.

[2] "Noorthij, Huis van opvoeding en onderwijs." P. N. van Kampen, Amsterdam. The individualisation of instruction is a proceeding about which very different opinions are entertained.

[3] This is exactly the "programma voor den cursus 1902-1903," of the "Erasmiaansch Gymnasium" of Rotterdam.

is in the fact that the Realistic students have two or three hours less in Greek and Latin respectively in the fifth class and three and four in the sixth, whilst the science subjects are strengthened or introduced newly in the Realistic Division. To *Greek* eight hours are devoted per week, from the 1st September to the New Year; but from the New Year to the long vacation (10th July), only five hours per week. *German* commences in Class II, and, starting with the New Year, occupies from thence onward three hours per week. Instruction in *writing*, *singing*, *drawing*, and *religion* is omitted from the gymnasial course; but the Gymnasium at Kampen has one hour optional *drawing*. According to the law, Gymnastics and Hebrew may be included as subjects of instruction, but are not usual. The Dutch have not in the past attached the same importance to gymnastics as have the Germans. On the other hand, it may be said that they are giving considerable attention to General Pædology, and the matter of school hygiene is receiving more attention. In Gymnasia, where there is gymnastics, it usually occupies from one to two hours per week.

The attitude to the question of Science *versus* Classics is much the same as elsewhere. Mr. John C. Medd says[1] that "the bifurcation, which dates from 1876, is the most unsatisfactory feature in the organisation of the Gymnasia. It must dislocate the work of the school to a considerable extent (?)[2]; and Dr. van Aalst, Rector of the Hague Gymnasium, considers that the lessons in the so-called exact sciences are far from being sufficient. The University Professors, however, are, as a rule, satisfied with the pupils from Division B after one or two years' further study; but there is a danger lest this attempt to combine scientific with classical studies at school should cause the pupils to learn 'little science and less Greek.'"

The higher scientific achievements of the people of the Netherlands are of the first order, and, so far as their school system may be judged thereby, there is little to complain of; in fact, some of the most brilliant work in science the world has seen has originated in Holland.

Nevertheless, the value of this testimony of their pædagogues cannot be allowed quite the same weight as that of Germany, with its more intense life and wider range of experience.

9. *Entrance Conditions.*—Entrance into the Gymnasium is, as previously stated, usually about the 12th year of age, and qualification for entrance is by examination. This embraces reading, writing, arithmetic, the mother-tongue, history, and geography. The arithmetic includes the four operations with whole numbers and with ordinary and decimal fractions, the H. C. F. and L. C. M.; and the systems of weights and measures. The elements of Dutch include the principal rules of orthography, the parts of speech, the structure of simple sentences, and readiness in composition on simple themes. History embraces the main features of the history of the Fatherland, some knowledge of the more important events and persons in general history, especially such as are intimately connected with the Netherlands and its development. Geography embraces the divisions of the world as a whole, a more detailed treatment of Europe, and the main features of the geography of the Netherlands and its colonies. According to the law mathematics and French may be added to these subjects wherever local exigencies indicate the desirability of so doing. As a matter of fact, all the Gymnasia require for their entrance, good accent in French, some knowledge of the grammar, and familiarity with the most frequently occurring irregular verbs. Readiness in translating French into the mother-tongue is also required at the entrance examination. For this reason pupils who think of going to the Gymnasia usually learn French, and generally French is the only language learnt between the ages 9 and 12. This is carried on, however, into the six-year course of the Gymnasium.

10. *Details in regard to the Instruction.*—First with respect to the *instruction in Greek.* In classes II–IV, the elements of the grammar are learnt as follows:—In class II, general etymology, the declensions, and the conjugations as far as the verbs in $\mu\iota$. These are impressed on the memory by written translations from Greek into Dutch and *vice versa*. Class III, continuation of the etymology and grammar. Class IV, the prepositions and the theory of cases. The reading and explanation of simple Attic prose and epic poetry. In class V, recapitulation and further continuation of the grammar, reading and explanation of Attic and Ionic prose and epics. In class Va, viz., the "humanistic division," the reading and explanation of more difficult prose. In class VI, cursory reading of Attic and Ionic prose, and epic and lyric poetry, which is extended in the humanistic division (VIa) to include more difficult prose and dramatic poetry. The authors usually read in class III are Xenophon (generally the Anabasis). In class IV, Xenophon, the Anabasis and Hellenica, Lysias and Homer. In class V, Xenophon, Lysias, Homer and Herodotus, class Va including also Plato and Demosthenes. In class VI, Lucian and Socrates are also read. In class VIa Aristophanes is read, and also a number of selections from Plato, Sophocles (Electra), Aristophanes, Thucydides, Sophocles' Œdipus and Euripides' Medea. Many institutions make considerable use of anthologies, such, for example, as Van Herwerden's "*Excerpta e poetis Græcis.*"

Next as regards the *instruction in Latin.* In classes I–IV, the elements of grammar are read about as follows:—

In class I, general etymology, including the irregular perfects and supines, the prepositions, adverbs and pronouns. In class II, the complete etymology and the principal rules of syntax. In class III, the systematic treatment of the theory of case. In class IV, the syntax and the theory of mood. The interrogative construction and the "*oratio obliqua.*" In class V, there is a thorough recapitulation of the whole grammar. In the lower classes the declensions and conjugations are written out, also translations from Latin into Dutch and *vice versa*. The reading and exegesis in class IV embraces prose and epic poetry; in classes V and VI, prose, epic, lyric, and dramatic poetry. Nepos or Cæsar are read in class I, also

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[1] Special Reports, vol. 8, Suppt. 1902, p. 38.

[2] This is by no means evident, and rather points to a lack of willingness to give the science tendency the fullest sympathy, at the same time the principle set forth is obviously correct.

also some of Phædrus. The reading for class II is Nepos and Cæsar, and in some gymnasia also Ovid. In class III, Cæsar, Ovid, Cicero, and often also Sallust and Phædrus. In class IV, Virgil, Sallust, Cicero, Ovid, and also Livy. In class V, Horace and Terence; in class VI, the same, and in some gymnasia also Plautus and Tacitus. Anthologies are frequently used, such for example as those of Kan and Schröder, Michaelis, and Woltjer.

The grammatical knowledge is impressed and fixed by translation of Dutch into Latin. In class VI (a) introduction into Roman history, Roman law, etc., is a feature of the instruction.

The *instruction in Dutch*, i.e., in the mother-tongue consists, in classes I–III, of the grammar, exercises in speaking and composition, and reading and interpretation of modern authors. In class IV, exercises in composition, the reading and explanation of the classic authors of the last part of the 18th century and of the 19th century, are the special features. In classes V and VI, exercises in composition, etc, and a rapid review of the literature of the Netherlands complete the course.

Instruction in French.—The instruction commences in class I, the regular and irregular verbs being taken. In class II, the irregular verbs are recapitulated, and the principal rules of syntax learnt. In class III, the syntax is concluded. Translations and exercises in conversation, the reading of selections from modern authors, and dictation, constitute the routine of work.

In classes IV and V the reading and explanation of the master-pieces of literature are undertaken. Owing to the great number of authors studied, the reading is often cursory. The literary horizon is, however, correspondingly wide.

The excellence of the language teaching, and the great readiness with which the pupils acquire foreign languages have been referred to in the Interim Report.

German and English.—It is necessary only to mention the authors read—In German;—Schiller, Goethe, Lessing's Dramas, Kleist, Gutzkow, Freytag, Kinkel, Hamerling, Fouqué; the prose works of Hauff, Heine, Freytag, Scheffel, Dahn, Storm, etc., etc. In English, the works of Shakespeare, Dickens, Macaulay, Thackeray, etc., are much read, the teachers of English often speaking it with such perfection that their nationality is not recognisable.

History.—Classes I–III are occupied with a review of general history and Dutch history up to about 1789. In class IV, ancient history, especially Greek and Roman, are combined with the teaching of ancient geography. Classes V and VI are devoted to the history of modern times. In class Va, Roman history is taken in connection with the development of Roman politics. In VIa, the history from the beginning of the 18th century of Holland itself, with special regard to the period 1795–1815 is the chief feature.

Instruction in other subjects.—Geography may be passed over without comment. In *arithmetic and algebra* in classes I–IV, the work covers the four fundamental operations with whole and fractional numbers, algebraic formulæ, the division of numbers into factors, systems of "weights and measures," proportion, equations of the 1st degree with one or several unknowns, surds and indices. In classes V and VI, quadratic equations and recapitulation of surds and indices. In *geometry*, classes I–IV deal with planimetry and V and VI, stereometry. The B division, in classes V and VI, deals with arithmetical and geometrical series, logarithms, diophantic equations of the 1st degree, plane and spherical trigonometry, the elements of plane analytical geometry, and recapitulation. Practical applications of the work done in the previous classes are also a feature.

In *Natural Science*, intuitional methods of teaching are employed, the most important indigenous plants and animals forming the subject matter. In classes V and VIb, there is an introduction into botany and zoology, and in classes V and VI into physics also. In V and VIb the general properties of bodies, the fundamental outlines of theoretical mechanics, the theory of gravitation and of heat, etc., are also treated.

11. *The Burgher and Higher Burgher Schools of Holland.*—While gymnasia in Holland are included under institutions affording *higher* instruction (hooger onderwijs), the higher schools are considered as institutions providing only the *middle* grade of instruction (middelbaar onderwijs).

According to the law of Holland public middle-grade instruction is given in (a) burger schools (burgerscholen); (b) higher burgher schools (hoogere burgerscholen); (c) land bouwscholen (agricultural schools); (d) the polytechnical school (polytechnische school).[1]

The burgher, *i.e.*, *lower* higher-schools, are of two kinds, viz., the (i) day-school (de burgerdagschool), and (ii) the evening school (avondschool). The day-school has a two-years' course, and the education to be given therein is:—(*a*) Mathematics; (*b*) the first principles of theoretical and applied mechanics, and a knowledge of mechanical contrivances; (*c*) also of physics and chemistry; (*d*) of natural history; (*e*) of technology or agriculture; (*f*) the elements of geography; (*g*) of history; (*h*) of the Netherlands language; (*i*) of State economy; (*k*) of freehand and linear drawing; (*l*) of gymnastics.[2]

Every community of over ten thousand inhabitants must equip at least one day and evening burgher school, *which may be associated with a lower public school.* (In this connection it may be mentioned the Commissioners saw excellent examples of the utilisation of schools for evening classes in London.)

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[1] Web. 2, Mei. 1863, etc., Titel II, § 12, p. 10.

[2] l.c. Hoofdstuk 1. § 13, p. 11.

While the character of the Higher Burgher School is defined by law,[1] there is no special obligation to provide them. Changing circumstances, however, have modified the practical necessities of providing certain types of schools, and while the lower burgher school as a day-school has practically disappeared, many communities of 10,000 inhabitants have satisfied the legal obligation to provide burgher schools by establishing *Higher* burgher schools. Smaller communities which are legally exempt from the obligation have often voluntarily established the higher class of school.

The higher burgher school is of two kinds, one with a *three-year* and the other with a *five-year* course. According to the educational law, the instruction in these is as follows :—

(1.) In the *three-year school*: (*a*) Mathematics; (*b*) the first principles of physics and chemistry; (*c*) of botany and zoology; (*d*) of political economy; (*e*) of book-keeping; (*f*) of geography; (*g*) of history; (*h*) of Netherlands language; (*i*) of French; (*k*) of English; (*l*) of High German; (*m*) of caligraphy; (*n*) of freehand and linear drawing; (*o*) of gymnastics.[2]

(2.) In the *five-year school*: (*a*) Mathematics; (*b*) the first principles of theoretical and applied mechanics, of mechanical contrivances, of technology; (*c*) of physics and its principal applications; (*d*) of chemistry and its principal applications; (*e*) of mineralogy, geology, botany, and zoology; (*f*) of cosmography; (*g*) the outlines of the provincial and State institutions of the Netherlands; (*h*) political economy and statistics, particularly of the Netherlands and its colonies; (*i*) geography; (*k*) history; (*l*) the language and literature of the Netherlands; (*m*) French language and literature; (*n*) English language and literature; (*o*) High-German, language and literature; (*p*) the first principles of commercial science, particularly a knowledge of merchandise[3] and of book-keeping; (*q*) caligraphy; (*r*) freehand and linear drawing; (*s*) gymnastics.[4]

The agricultural schools are referred to in a later chapter.

12. *The Programmes of the Higher Burgher Schools.*—The programme of the three-years' Burgher School is given in Chap. VI of the Interim Report, sec. 29, p. 69; also of the first three classes of the five-years' course for youths and young women.

The programmes hereunder are not absolutely identical therewith. It may be explained that they are rarely absolutely the same.[5] It will be sufficient to give two programmes, one, say, from Rotterdam, the other from Utrecht.

Programme of the Higher Burgher School, Rotterdam.

Subjects.	Classes and Hours per Week.					
	I.	II.	III.	IV.	V.	Totals.
Dutch	4	3	3	2	2	14
French	4	3	4	2	2	15
German	4	3	3	3	2	15
English	.....	4	3	2	2	11
History	2	3	3	3	2	13
Geography	3	2	1	1	2	5
Civic instruction	.....	.....	.....	2	3	5
Mathematics	7	7	6	4	4	28
Mechanics	.....	.....	.....	2	2	4
Physics	.....	.....	2	3	3	8
Chemistry	.....	.....	.....	3	6	9
Botany and Physiology...	.....	2	3	2	1	8
Cosmography	.....	.....	.....	1	1	2
Book-keeping	.....	.....	.....	1	1	2
Freehand drawing	4	2	1	1	1	9
Linear drawing	.....	.....	1	1	2	4
Gymnastics	2	2	2	.....	.....	6
Totals	30	31	32	33	36	162

The age of entrance is 12 years.

Programme

[1] Wet van 2den Mei, 1863, Titel II, Hoofdstuk I, § 15, p. 13. "De hoogere burgerscholen worden onderscheiden in hoogere burgerscholen met vijfjarigen, en in hoogere burgerscholen met driejarigen cursus."

[2] l.c. § 16; pp. 13, 14.

[3] The Museums of commercial and industrial products seen by the Commissioners in such schools, remind one that the equipment of the school makes it possible for the teaching to be realistic.

[4] l.c. § 17, p. 14.

[5] This may be seen from any of the reports; *e.g.*, that of the Commission for Public Instruction of Rotterdam (De Commissie voor het openbaar onderwijs, April, 1902). The programme is taken from p. 150 of this report.

Programme of the State Higher Burgher School at Utrecht.

Subjects.	Classes and Hours per Week.					
	I.	II.	III.	IV.	V.	Totals.
The Mother-Tongue	3 4	3 3	2 2	2 2	2 2	12 13
French	4 4	3 3	3 3	2 2	2 2	14 14
German	3 4	3 4	3 3	2 2	2 2	13 15
English	...	4 4	4 4	2 2	2 2	12 12
History	3	3	3	2	2	13 13
Geography	3	2 2	2 2	1 1	1 1	9 9
Communal, Prov. and National Institutions ...	...	...	1 0	1 1	1 1	3 2
Political Economy	...	...	...	1 2	1 1	2 3
Mathematics	7 7	8 6	6 6	6 4	3 3	30 26
Mechanics	...	...	...	2 2	2 2	4 4
Physics or Technology	...	...	2 2	2 3	4 4	8 9
Chemistry	...	...	...	4 3	4 4	8 7
Biology or Geology	2 1	2 1	1 2	1 2	1 2	7 8
Cosmography	...	...	...	1 1	1 1	2 2
Commercial Law	...	...	...	... 1	1 2	1 3
Book-keeping	...	...	...	1	1	2
Caligraphy	1 1	... 1	...	...	...	1 2
Freehand Drawing	2 3	2 3	2 3	1 3	1 3	8 15
Geometrical Drawing	...	...	1	1	1	3
Gymnastics	2	2	2	... 2	... 2	6 10
Totals	30 32	32 32	32 32	32 35	32 36	158 167

Age of entrance 12 years.

The smaller figures are from other programmes. They serve to illustrate the slight differences that exist.

13. *Time Tables.*—It is customary in many secondary schools in Europe to have a complete time-table shewing not only the hour and subject but also the teacher. The following is a translation of the time-table of a school at Rotterdam seen by the Commissioners.

The two time-tables for schools at Utrecht will give a sufficient indication of the general idea of distributing the time.

The tables will reveal the fact too that one man does not pretend to teach all subjects. This method of special teaching is characteristic throughout Europe.

EXAMPLE

EXAMPLE OF THE TIME-TABLE OF THE SECOND HIGHER BURGHER SCHOOL WITH A FIVE YEARS' COURSE FOR BOYS AT AMSTERDAM.

Days and Hours.		Class.		Class.		Class.			Class.		Class.	
		IA.	IB.	IIA.	IIB.	IIIA.	IIIB.	IIIC.	IVA.	IVB.	VA.	VB.
Monday	8·45–9	....	.....	.....	.....	Gymnastics (Staalman)	.....	.....	.....	.....	.....	.....
	9–10	French (Griss)	Drawing (Horn)	German	Mathematics (Lindner)	Natural History (Heinsius)	Mathematics (Boeije)	French (Mauritz)	Physics (Bouman)	Chemistry (Cleeff)	History (De Vries)	Dutch (De Vos)
	10–11	Mathematics	Drawing (Horn)	Mathematics (Boeije)	French (Griss)	Dutch (De Vos)	French (Mauritz)	Natural History (Heinsius)	Chemistry (Cleeff)	History (De Vries)	Physics (Bouman)	Geography (Hagedoorn)
	11–12	Geography (Hagedoorn)	Mathematics	Dutch (De Vos)	English	Drawing (Horn)	Natural History (Heinsius)	History (De Vries)	Mathematics (Boeije)	Physics (Bouman)	Mechanics (Bouten)	Mathematics (Lindner)
	1·30–2·20	German (Voogd)	Dutch (De Vos)	French (Mauritz)	History (De Vries)	Drawing (Horn)	Mathematics (Boeije)	Mathematics	Civic Institution (Bos)	Mathematics (Lindner)	English (Eijkman)	Nat. Philosophy (Bouman)
	2·20–3·10	Drawing (Horn)	German (Voogd)	History (De Vries)	Geography (Hagedoorn)	Mathematics (Bouten)	Dutch (De Vos)	German	Mechanics (Lindner)	English (Eijkman)	Physics (Bouman)	French (Mauritz)
	3·10–4	.....	History (De Vries)	English (Eijkman)	German (Voogd)	French (Mauritz)	Physics (Bouman)	Dutch (De Vos)	Cosmography	Civic Institution (Bos)	German	Desc. Geometry
	4–4·45	.....	.....	.....	.....	.....	.....	.....	.....	Gymnastics (Staalman)	.....	.....
Tuesday	8·45–9	.....	.....	.....	.....	.....	.....	Gymnastics (Staalman)	.....	.....	.....	.....
	9–10	Mathematics	Dutch (De Vos)	Drawing (Horn)	Gymnastics (Staalman)	History (De Vries)	English (Eijkman)	Nat. Philosophy (Bouman)	Mathematics (Boeije)	Mathematics (Lindner)	Geography (Hagedoorn)	Natural History (Heinsius)
	10–11	Dutch	German (Voogd)	Drawing (Horn)	Dutch (De Vos)	Geography (Hagedoorn)	History (De Vries)	English (Eijkman)	French (Mauritz)	Physics (Bouman)	Natural History (Heinsius)	Linear Drawing (Baints)
	11–12	History	Caligraphy (Schmid)	German	Mathematics (Lindner)	Dutch (De Vos)	Physics (Bouman)	Mathematics	Geography (Hagedoorn)	French (Mauritz)	Mathematics (Boeije)	Linear Drawing (Baints)
	1·30–2·20	Drawing (Horn)	Natural History (Heinsius)	Geography (Hagedoorn)	English	French (Mauritz)	Mathematics (Boeije)	History (De Vries)	Dutch (De Vos)	German	Desc. Geometry	Chemistry (Cleeff)
	2·20–3·10	German (Voogd)	Mathematics	History (De Vries)	French (Griss)	Mathematics (Bouten)	Mathematics (Boeije)	German	Drawing (Horn)	Linear Drawing (Baints)	Dutch (De Vos)	English (Eijkman)
	3·10–4	Natural History (Heinsius)	French (Griss)	Dutch (De Vos)	German (Voogd)	English (Eijkman)	French (Mauritz)	Mathematics	German	Linear Drawing (Baints)	Chemistry (Cleeff)	History (De Vries)
	4–4·45	.....	.....	.....	.....	.....	.....	.....	Gymnastics	.....	.....	.....
Wednesday.	8·15–9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	9–9·50	Mathematics	Natural History (Heinsius)	German	Geography (Hagedoorn)	Physics (Bouman)	History (De Vries)	French (Mauritz)	English (Eijkman)	Mechanics (Lindner)	Civic Institution (Bos)	Chemistry (Cleeff)
	9·50–10·40	Dutch	French (Griss)	French (Mauritz)	History (De Vries)	Mathematics (Bouten)	Natural History (Heinsius)	English (Eijkman)	Chemistry (Cleeff)	State Economy (Bos)	Book-keeping (Vliet)	Physics
	10·40–11·30	French (Griss)	Mathematics	Mathematics (Boeije)	Mathematics (Lindner)	French (Mauritz)	German	Geography (Hagedoorn)	History (De Vries)	Natural History (Heinsius)	Chemistry (Cleeff)	Civic Institution
	11·30–12·20	History	Geography (Hagedoorn)	English (Eijkman)	French (Griss)	German	Mathematics (Boeije)	Mathematics	Natural History (Heinsius)	Book-keeping (Vliet)	State Economy (Bos)	Cosmography (Lindner
	2–4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Prac. Chemistry (Cleeff)

EXAMPLE OF THE TIME-TABLE OF THE SECOND HIGHER BURGHER SCHOOL WITH A FIVE YEARS' COURSE FOR BOYS AT AMSTERDAM—*continued.*

Days and Hours.		Class. IA.	Class. IB.	Class. IIA.	Class. IIB.	Class. IIIA.	Class. IIIB.	Class. IIIC.	Class. IVA.	Class. IVB.	Class. VA.	Class. VB.
Thursday.	8·45–9	.....	.....	.....	.....	.....	.....	....	.....	Gymnastics (Staalman)	.....	.....
	9–10	German (Voogd)	Dutch (De Vos)	Natural History (Heinsius)	English	Physics (Bouman)	Geography (Hagedoorn)	English (Eijkman)	Mathematics (Boeije)	Chemistry (Cleeff)	History (De Vries)	Drawing (Horn)
	10–11	Gymnastics (Staalman)	German (Voogd)	Mathematics (Boeije)	Natural History (Heinsius)	English (Eijkman)	Dutch (De Vos)	Drawing (Horn)	Chemistry (Cleeff)	Geography (Hagedoorn)	Linear Drawing (Baints)	History (De Vries)
	11–12	Caligraphy (Schmid)	History (De Vries)	Dutch (De Vos)	German (Voogd)	Mathematics (Bouten)	Mathematics (Boeije)	Drawing (Horn)	Physics (Bouman)	Chemistry Cleeff)	Linear Drawing (Baints)	English (Eijkman)
	1·30–2·20	History	Gymnastics (Staalman)	French (Mauritz)	Dutch (De Vos)	History (De Vries)	Drawing (Horn)	Mathematics	Chemistry (Cleeff)	Physics (Bouman)	German	Mechanics (Lindner)
	2·20–3·10	Dutch	Mathematics	History (De Vries)	Mathematics (Lindner)	Mathematics (Bouten)	Drawing (Horn)	German	Lin. Drawing (Baints)	Dutch (De Vos)	French (Mauritz)	Physics (Bouman)
	3·10–4	Mathematics	Drawing (Horn)	Gymnastics) (Staalman)	History (De Vries)	Dutch (De Vos)	Physics (Bouman)	French (Mauritz)	Lin. Drawing (Baints)	Mathematics (Lindner)	Chemistry (Cleeff)	German
	4–4·45	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Gymnastics (Staalman)
Friday	8·45–9	.....	....	....	.....	.....	.....	.....	Gymnastics (Staalman)	....	.....	....
	9–10	French (Griss)	Mathematics	Mathematics (Boeije)	English	Geography (Hagedoorn)	English (Eijkman)	Dutch (De Vos)	History (De Vries)	Chemistry (Cleeff)	Drawing (Horn)	Mathematics (Lindner)
	10–11	Mathematics	French (Griss)	Geography (Hagedoorn)	Dutch (De Vos)	English (Eijkman)	German	Gymnastics (Staalman)	Physics (Bouman)	History (De Vries)	Mathematics (Boeije)	Chemistry (Cleeff)
	11–12	German (Voogd)	History (De Vries)	Mathematics (Boeije)	French (Griss)	Gymnastics (Staalman)	Geography (Hagedoorn)	Physics (Bouman)	English (Eijkman)	Mathematics (Lindner)	Dutch (De Vos)	Mechanics (Lindner)
	1·30–2·20	Mathematics	German (Voogd)	English (Eijkman)	Drawing (Horn)	Mathematics (Bouten)	Dutch (De Vos)	Natural History (Heinsius)	German	Mechanics (Lindner)	Chemistry (Cleeff)	French (Mauritz)
	2·20–3·10	French (Griss)	Dutch (De Vos)	Natural History (Heinsius)	Drawing (Horn)	German	French (Mauritz)	Geography (Hagedoorn)	Mechanics (Lindner)	English (Eijkman)	Desc. Geometry	German
	3·10–4	Geography (Hagedoorn)	French (Griss)	German	Mathematics (Lindner)	Natural History (Heinsius)	Gymnastics (Staalman)	Mathematics	Dutch (De Vos)	German	French (Mauritz)	Chemistry (Cleeff)
	4–4·45	.....	....	.....	.....	.....	.....	.....	.. ..	.....	Gymnastics (Staalman)	.....
Saturday.	8·45–9	.....	.....	.....	.....	.....	.....	.....	....	.....	.....	.....
	9–9·50	Gymnastics (Staalman)	Geography (Hagedoorn)	French (Mauritz)	German (Voogd)	Physics (Bouman)	Gymnastics (Staalman)	Dutch (De Vos)	Mathematics (Boeije)	Cosmography (Lindner)	English (Eijkman)	Desc. Geometry
	9·50–10·40	Natural History (Heinsius)	Gymnastics (Staalman)	English (Eijkman)	Mathematics (Lindner)	Mathematics (Bouten)	History (De Vries)	History (De Vries)	French (Mauritz)	Dutch (De Vos)	Physics (Bouman)	Book-keeping (Vliet)
	10·40–11·30	Caligraphy (Schmid)	Mathematics	Gymnastics (Staalman)	Natural History (Heinsius)	History (De Vries)	Mathematics (Boeije)	Physics (Bouman)	State Economy (Bos)	French (Mauritz)	Mechanics (Bouten)	Dutch (De Vos)
	11·30–12·20	Dutch	Caligraphy (Schmid)	Mathematics (Boeije)	Gymnastics (Staalman)	German	German	Mathematics	Book-keeping (Vliet)	Mathematics (Lindner)	Cosmography (Bouman)	State Economy (Bos)
	2–4	....	.....	.....	.....	....	English	.....	.....	.....	....	Prac. Chemistry (Cleeff)

TIME-TABLE OF THE STATE HIGHER BURGHER SCHOOL, UTRECHT, 1960–1.

Days and Hours.		Class. IA.	Class. IB.	Class. IIA.	Class. IIB.	Class. IIIA.	Class. IIIB.	Class. IVA.	Class. IVB.	Class. VA.	Class. VB.
Monday	9–9·50	Bot. and Biology	Freehand Draw.	Gymnastics	German	Physics	Algebra	Stereometry	Geom. Draw.	Dutch	Hist. of Netherlands
	9·50–10·40	Geometry	Bot. and Biology	German	Freehand Draw.	Algebra	Physics	Dutch	Cosmography	Hist. of Netherlands	Bot., Biol., & Geol.
	10·40–11·30	Freehand Draw.	Algebra	Geometry	Dutch	German	English	Geography	State Institutions	Mechanics	Physics
	11·30–12·15	Dutch	Geometry	Arithmetic	Gen. History	Gymnastics	State Institutions	Desc. Geometry	English	Freehand Draw.	Dutch
	1·30–2·20	German	Geography	English	Algebra	French	German	Cosmography	Pol. Economy	Physics	Desc. Geometry
	2·20–3·10	Geography	German	French	Geography	English	Gymnastics	Trigonometry	Mechanics	German	Pol. Economy
	3·10–4	Gymnastics	Caligraphy	Geography	English	Gen. History	Freehand Draw.	State Institutions	Trigonometry	Geom. Draw.	French
Tuesday	9–9·50	Caligraphy	German	Geometry	Arithmetic	State Institutions	Geography	Mechanics	Dutch	Desc. Geometry	Chemistry
	9·50–10·40	German	Geometry	Algebra	German	Geometry	Dutch	Hist. of Netherlands	Chemistry	Bot., Biol., & Geol.	Cosmography
	10·40–11·30	Geometry	Arithmetic	French	Freehand Draw.	Geography	German	Dutch	Stereometry	Chemistry	Gen. History
	11·30–12·15	.....	.....	Dutch	Gymnastics	Geom. Draw.	Gen. History	Chemistry	French	German	Freehand Draw.
	1·30–2·20	Arithmetic	Gymnastics	English	Geometry	French	Geometry	German	Freehand Draw.	Pol. Economy	Mechanics
	2·20 3·10	French	Gen. History	Hist. of Netherlands	English	Freehand Draw.	French	Bot. and Biology	Desc. Geometry	Cosmography	German
	3·10–4	Gen. History	French	Freehand Draw.	Hist. of Netherlands	Bot. and Biology	Gymnastics	Algebra	English	French	State Institutions
Wednesday.	9–9·50	Dutch	Algebra	German	French	Dutch	Hist. of Netherlands	Chemistry	Physics	Book-keeping	English
	9·50–10·40	Algebra	Dutch	English	German	Geography	French	Physics	Mechanics	Dutch	Geom. Draw.
	10·40–11·30	Geography	French	Dutch	Geometry	English	Geography	French	Chemistry	Physics	Geometry
	11·30–12·15	French	Geography	Geography	Algebra	Gymnastics	English	Geom. Draw.	French	Geometry	Chemistry
Thursday.	1·30–2·20	French	Dutch	French	Geometry	Gen. History	English	Physics	German	Chemistry	Geography
	2·20–3·10	Dutch	Gen. History	Geometry	French	German	Arithmetic	English	Geography	Physics	Chemistry
	3·10–4	Geometry	French	Gen. History	Geography	Arithmetic	German	Chemistry	Physics	English	French
Friday	9–9·50	German	Gymnastics	Freehand Draw.	English	French	Physics	Desc. Geometry	Dutch	Chemistry	Book-keeping
	9·50–10·40	Gen. History	German	Dutch	Geometry	Geometry	English	German	Chemistry	French	Physics
	10·40–11·30	Gymnastics	Geometry	Bot. and Biology	Dutch	English	Geometry	Gen. History	German	Mechanics	Chemistry
	11·30–12·15	.....	....	Arithmetic	Bot. and Biology	German	Freehand Draw.	Stereometry	Gen. History	Algebra & Trigonom.	English
	1·30–2·20	Arithmetic	Dutch	Gymnastics	French	Hist. of Netherlands	Geom. Draw.	Freehand Draw.	Stereometry	English	Physics
	2·20–3·10	French	Geography	Geometry	Arithmetic	Freehand Draw.	French	Mechanics	Bot. and Biology	Geography	German
	3·10–4	Freehand Draw.	French	German	Gen. History	Algebra	Gen. History	French	Algebra	Physics	Mechanics
Saturday.	9–9·50	Geography	Arithmetic	English	Bot. and Biology	Physics	Dutch	Chemistry	Hist. of Netherlands	Comm. Law	Algebra & Trigonom.
	9·50–10·40	Algebra	Hist. of Netherlands	Bot. and Biology	Dutch	English	Trigonometry	Book-keeping	Chemistry	Gen. History	Physics
	10·40–11·30	Hist. of Netherlands	Bot. and Biology	Gen. History	English	Trigonometry	Algebra	Pol. Economy	Book-keeping	Chemistry	Dutch
	11·30–12·15	Bot. and Biology	Freehand Draw.	Algebra	Gymnastics	Dutch	Bot. and Biology	English	Desc. Geometry	State Institutions	Comm. Law.

Practical instruction, laboratory practice, etc. :—Physics, Class V, Wednesday, 1·15–2·15 p.m. ; Chemistry, 2·15–3·45 p.m. ; Saturday, 1·15–2·45 p.m.

TIME-TABLE AT THE HIGHER BURGHER SCHOOL FOR GIRLS, UTRECHT, 1900–1.

Days and Hours.		Class. IA.	Class. IB.	Class. IIA.	Class. IIB	Class. IIIA.	Class. IIIB.	Class IV.	Class V.
Monday	9–10	Dutch	Natural History	Drawing	French	History	French	Physics	Dutch
	10–11	German	Dutch	English	Needlework	Drawing	English	History	German
	11–12	Drawing	German	German	Arithmetic	English	History	Needlework	History
	1·15–2·10	History	French	Arithmetic	Dutch	Geography	Natural History	French	History of Art
	1·45–2·10	....	.....	Gymnastics	....	....	.....	.....	.....
	2·10–3·5	Writing	Gymnastics	Needlework	Drawing	Arithmetic	Dutch	Dutch	Natural History
	2·40–3·5	Gymnastics	Writing	.....	....	.....	....	.....	.....
	3·5–4	French	Needlework	Dutch	Gymnastics	Natural History	Drawing	Arithmetic	French
	3·30–4	... .	.....	.....	English	.....	.....	.....	.....
	4–5	.....	.....	... .	.....	.....	....	Gymnastics	Gymnastics
Tuesday	9–10	Arithmetic	Geography	French	Natural History	Dutch	German	Physics	English
Pupils have an opportunity of attending classes for religious instruction.									
	1·15–2·10	Geography	Arithmetic	History	Geography	German	Arithmetic	History	Needlework
	2·10–3·5	Needlework	German	Geography	History	English	Geography	German	Arithmetic
	3·5–4	German	French	Arithmetic	English	Arithmetic	Dutch	Geography	German
Wednesday	9–10	Dutch	German	Natural History	French	German	Arithmetic	Arithmetic	English
	9·30–10	....	Gymnastics	.....	.....	....	.....	.....	.....
	10–11	Arithmetic	Dutch	English	Gymnastics	French	English	German	Physics
	10·30–11	... .	.. ..	Gymnastics	English	....	.....	.....	.....
	11–12	Gymnastics	Arithmetic	Dutch	German	Natural History	French	English	Geography
	11·30–12	French	.....	... .	.....	.. ..	.....	.....	.....
	12–1	.....	.....	.....	.....	....	.....	Gymnastics	Gymnastics
Thursday	9–10	Dutch	Geography	Drawing	English	French	Physics	Dutch	Arithmetic
	10–11	Drawing	Dutch	German	Dutch	English	Needlework	History	French
	11–12	Geography	Drawing	French	Needlework	History	Geography	English	History
	1·15–2·10	French	History	Needlework	Arithmetic	Dutch	German	Drawing	History of Art
	1·45–2·10	.....	.....	.....	Gymnastics	.....	....	.....	.....
	2·10–3·5	Natural History	Gymnastics	Arithmetic	History	Needlework	English	Drawing	German
	2·40–3·5	Gymnastics	Natural History	.. ..	.....	.. ..	.....	.....	.....
	3·5–4	German	French	Gymnastics	German	Arithmetic	Drawing	French	Natural History
	3·30–4	.....	.....	English	.....	.....	.....	.....	.....
	4–5	... .	....	....	... .	Gymnastics	Gymnastics	.....	.....
Friday	9–10	Arithmetic	French	History	Drawing	English	History	Physics	Geography
	9·30–10	.....	Gymnastics	.....	....	.....	.....	.....	.....
	10–11	Geography	Drawing	Geography	Gymnastics	Physics	Arithmetic	English	History
	10 30–11	....	.....	Gymnastics	Geography	.....	.....	.....	.....
	11·12	Gymnastics	Arithmetic	English	Natural History	Geography	Needlework	History	Dutch
	11·30–12	German	.. ..	.....	....	.. ..	.....	.....	.....
	1·15–2·10	French	Geography	Dutch	German	Drawing	Natural History	Arithmetic	French
	2·10–3·5	Natural History	History	German	French	Dutch	French	Needlework	Drawing
	3·5–4	History	Needlework	Natural History	Dutch	History	English	German	Drawing
Saturday	9–10	Dutch	German	English	Arithmetic	German	Dutch	French	Physic
	10–11	Needlework	Arithmetic	Geography	English	French	German	Geography	Dutch
	11–12	Arithmetic	Dutch	French	Geography	Needlework	History	Dutch	English
	12–1	....	.....	... .	.....	Gymnastics	Gymnastics	.....	.....

Dressmaking, etc., is taught as well as ordinary needlework.

14. *The Instruction.*—Although there is not exact uniformity, there are no glaring disparities in the general scheme of instruction. Instruction in English commences in some schools in the first-class, in others in the second ; planimetry or mensuration generally in the first-class, but sometimes in the second ; chemistry in the third or fourth class ; practical chemistry in the fourth or the fifth class. This is, of course, a defect where pupils change their residence.

The instruction is excellent. Reference has been made to language teaching already, viz., in Chap. XXII of the Interim Report, sec. 16, pp. 204–5.

In every school may be found a chemical laboratory, in which as a rule about twenty pupils may make practical experiments at the one time. Besides this, there are physical cabinets, map-rooms, drawing-rooms with models, the apparatus necessary for teaching geography, history, botany, zoology, etc.

Often the schools possess quite extensive libraries.

The apparatus for the study of physics and chemistry is surprisingly excellent, and indeed for science generally. The teaching is direct and experimental. In going through these schools, one realises instantly that in Holland, as in Europe generally, the opportunity for thoroughly teaching science is all that can be desired.

15. *Promotion examinations.*—The school year is from 1st September to the middle of July, and at its close an examination to determine the promotion to the higher classes is held. This examination is partly written and partly oral. Excellence in the written part is no substitute for the oral part. The teachers decide by vote the question of promotion, which occurs when the result has been generally satisfactory in all subjects but one. When the pupil is unsatisfactory in *two* subjects, he may be allowed an examination in these subjects shortly before the beginning of the next school year.

16. *Leaving Examinations.*[1]—The final examination in the Higher Burgher School covers about the following, viz., *language, Dutch language and literature.* Dexterity in written and oral use of language ; perfect orthography and accurate grammatical knowledge. An acquaintance with the various periods of the history of literature, and of the most celebrated prose and political writers.

French, English, and German languages and literatures.—A written essay is required in each language, to afford evidence that the candidate can express himself in the language without making gross errors. The oral part of the examination concerns the grammar and literature. In connection with the latter element a knowledge of the principal literary periods is required ; besides this, the candidate must afford evidence of the fact that he has intelligently read some of the most celebrated prose and poetry in the language.

Mathematics : The examination is to satisfy the examiner that the candidate has a sufficient knowledge of the various methods and processes of solution of arithmetic and algebra to make ordinary applications thereof ; that he is accustomed to the use of logarithmic tables ; that he has a knowledge of the theory of logarithms, of arithmetical and geometrical progression, of indeterminate equations, and of the binomial theorem. His knowledge of planimetry and stereometry must include the calculation of polygons, spherical triangles, and curved bodies ; he must exhibit some aptitude in solving the ordinary goniometric equations, and simple exercises in plane trigonometry, and in its applications to practical "geometry." In descriptive geometry the examination embraces curved surfaces.

In *Mechanics* the examination covers the following ground, viz. :—The laws of static equilibrium the motion of rigid and fluid bodies, the theory of gases, the application of the latter to the theory of machines, the law of gravity, the oscillation of pendulum, inertia, etc., etc. Special reference is made to the most important means of transmitting and transforming motion ; the principal types of machinery for utilising the energy of wind, water, and steam ; to the chemical and mechanical processes in the treatment of metals and in the manufacture of the most important industrial products, *e.g.*, glass, faience, textile fabrics, wool, paper, soap, illuminating gas, and similar things.

Physics : Candidates are examined in experimental physics, and its application to the arts and crafts ; in their knowledge of the methods of experiment by means of which the physical laws and physical constants are determined ; in the application of physical knowledge to the solution of some simple problems. In connection with this subject, more importance is attached to the co-ordination of the knowledge of the various energies in nature than to mere knowledge of detail.

Chemistry : The examination in chemistry touches inorganic chemistry and some of the most important facts of organic chemistry. Although ability to make qualitative analyses of inorganic substances is not absolutely required of the candidates, it is strongly recommended, and candidates often respond to the recommendation and are accordingly examined.

Elements of mineralogy and geology : Candidates are required to know the different crystallographic systems, the general properties of minerals, particularly those which concern the study of geology, or th at are industrially important. They are required to know the most important periods in the development of he earth's crust and the characteristic features of the geology of the Netherlands.

Botany : In Botany the student is examined in organography and general systematic botany.

Zoology : The candidate is required to possess a knowledge of the most important features of the structure of animals, particularly as it relates to their division into classes and families. Importance is attached to either a thorough knowledge of animal and plant anatomy and physiology, or to a special knowledge of individual families in the plant and animal kingdom.

Cosmography : The examination in cosmography covers the form and dimensions of the earth, the mode of their determination, the phænomena of apparent celestial motion as due to the motion of the earth, the laws of motion, and of attraction, etc. In addition, a general knowledge of the fixed stars, planets, comets, of the mode of calculating their distances, and motion, etc., is also demanded.

State

[1] De Eindexamens. Wet 2 Mei, 1863. Titel V. p. 29 et seq.

State institutions : The candidate is required to know the general organisation and administration of the State, of the provinces, and of the communities of the Netherlands, and to have some comprehension of the most important organic laws governing all these. Some knowledge is also required concerning the government and administration of the colonies of the Netherlands in Asia and America.

Political Economy and Statistics.—The examination covers the following range, viz. :—The laws of production and distribution, currency, exchange and consumption of goods, influence of government upon the progress of the people, taxes, State obligations, national debt, free-trade and protective duties, etc., etc.

Geography.—Mathematical geography is dealt with in connection with cosmography. The candidate is examined in physical and political geography, the former covering climatology, the theory of wind, the distribution of plants, animals, and the human race over the surface of the earth. The latter embraces the boundaries of countries, their horizontal and vertical formations, their political relationships, their industries, trade and commerce, the whole having special regard to relationship with the Netherlands, and the mutual relationship of the Netherlands and her colonies to the rest of the world.

History.—While ancient, mediæval, and modern history are included in the examination, chief stress is laid upon the last. Candidates are required to define the character of the principal periods, and to shew some knowledge of the political and economical circumstances of the various peoples of each period. As far as it is possible the modern elements of history are orientated with reference to Holland itself, and the knowledge of Dutch history is required to be exact.

Commercial Science.—The candidate is examined in the source of supply and the manufacture of the various articles dealt with in commerce or industry, the most common adulterations, etc. He must have a knowledge of book-keeping in single and double entry, must shew some aptitude in making up a balance-sheet, in commercial calculation, and possess a knowledge of State forms, acts, etc.

Drawing.—The examination in drawing covers the drawing of ornaments from models, sketching simple objects from nature or from impressions in plaster of Paris, geometrical drawing and projection, etc.

The final examinations in the subjects above enumerated are held throughout the State on the same days, the written questions being everywhere identical. Each province has a Queen's Commissary (Commissaris der Koningin), who appoints an Examining Commission from among the directors and teachers of the Higher Burgher Schools. Each of these Commissions sends to the Inspectors of *Middle Education* (the Burgher Schools, as previously mentioned, being known as Middle Schools) the problems, questions, themes for essays, etc., from among which a selection may be made. The examination papers are sent under seal immediately before the beginning of the written examination, to the Director of the Higher Burgher Schools. At the examination the supervision is generally conducted by two teachers. The oral part of the examination lasts as a rule about three days, as much as 7 hours being devoted to each candidate. This is held in any city of the province which the Commissary may decide upon.

17. *The Significance of the Diploma.*—The diploma given to those who pass the above examinations successfully is indispensable as a preliminary qualification for those engineers, architects, and technologists who aspire to positions in the State service ; it qualifies also for entrance into the Polytechnical School at Delft. It is necessary moreover for those who desire to enter on special studies in the "Indies" school at Delft or Leyden, and for those who wish to enter the official service of the Dutch colonies. It is required in order to enter the Military School at Haarlem (for the education of infantry officers) and the artillery course in Delft (where the artillery officers are educated).

In regard to *medicine* and *pharmacy*, some explanation is necessary. In Holland a distinction is made between the ordinary physician and the Doctor of Medicine and also between the pharmacist and the Doctor of Pharmacy. The doctor of medicine must possess the Maturity Certificate of the Gymnasium, or if he has the certificate of the Higher Burgher School he must pass a very difficult and comprehensive examination (intentionally made so) in Greek and Latin. In order to be a physician this is not necessary; and for this it is sufficient to pass the final examination in the Higher Burgher School.

18. *Qualification for Teachers of the Higher Burgher Schools.*—To be recognised as qualified to give instruction in a Higher Burgher School it is necessary to obtain either an Academic Degree or else a Diploma conferred after a special examination. The required degrees in Holland are of two kinds—the Doctor of Letters and Doctor of Natural Philosophy. The former is necessary for those who wish to teach the Netherlands language and literature, history, and so on ; the latter for those who desire the mathematical and science subjects. In order to give instruction in the subject of State institutions, political economy, statistics, etc., the qualification equivalent to Doctor of Laws is required. The passing of the examination, however, held by the State will also qualify for teaching in these subjects. Teachers of Geography, English, French, and German, must pass the State examination, and are very rigorously examined as to their knowledge of the literature and grammar, their command of style, and their facility in composition. The following requirements for the teachers of Higher Burgher Schools are translated from the Law of 2nd May, 1863, and subsequent modifications (Titel VI, ss. 68–82, pp. 35–41).

Each year the Minister of the Interior nominates an Examining Commission to determine the qualification of candidates who desire the right to give the middle grade of instruction (voor het middelbaar onderwijs) (s. 69).

To obtain the qualification in *mathematics*, and mechanics, and other subjects, there are two parts to the examination. The first embraces—(*a*) arithmetic, algebra, plane and spherical geometry, the elements of descriptive and analytical geometry. (*b*) The elements of theoretical and applied mechanics, knowledge of machinery and technology. (*c*) The elements of physics, chemistry, and cosmography. (*d*) The elements of mineralogy, botany, physiology, and zoology. The second part of the examination covers descriptive and analytical geometry, differential and integral calculus, theoretical and applied mechanics. (Sec. 70.)

To give instruction in *physics* one must pass in the first section, as above (*a* to *d*), and then further in the section, viz. :—(*a*) analytical geometry ; (*b*) differential and integral calculus ; (*c*) theoretical mechanics ; (*d*) physics and its most important applications ; (*e*) meteorology; (*f*) chemistry. (Sec. 71.)

To

To give instruction in *chemistry*, the first section must be passed as before, then the second part of the examination consists of (*a*) general, applied and analytical chemistry, (*b*) chemical technology, and (*c*) physics. (Sec. 72.)

The qualification to teach the *Dutch language and literature*, in the science of history, it is necessary to pass in (*a*) the Netherlands' language and literature; (*b*) history, (*c*) mathematics, (*d*) physics, and statistical geography. (Sec. 74.)

To give instruction in *political economy* it is necessary to pass in (*a*) political economy and statistics, with special reference to the Netherlands and its colonies; (*b*) the fundamental elements of communal, provincial and state institutions in the Netherlands. (Sec. 74.)

The qualifications to teach *commercial science* involve the passing of an examination in (*a*) book-keeping; (*b*) commercial science, commercial law, commercial geography, statistics of commerce and trade, state finance, knowledge of industrial products, etc. (Sec. 75.)

Similarly special qualifications are required by those who desire the qualification to teach the (*a*) French, (*b*) English, or (*c*) German language and literature; (*d*) freehand, linear and perspective drawing; (*e*) caligraphy; (*f*) modelling; (*g*) gymnastics.

Besides the examination in special subjects an examination in the theory of instruction and in pædagogy must also be passed.

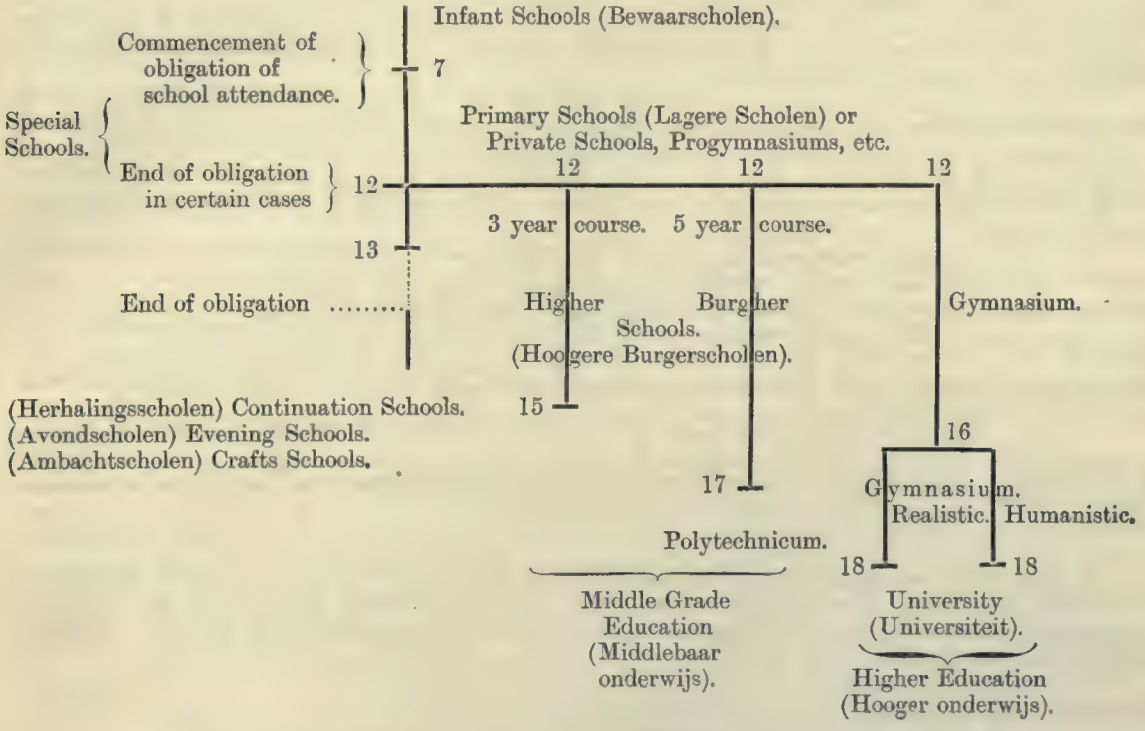
The examinations are more than ordinarily severe, and the teachers appear to be thoroughly qualified for their work. Mr. Medd, in the Special Reports (Suppt. to Vol. 8, p. 31), says:—"An intelligent enthusiasm is the characteristic of all Dutch teachers. The teacher is *alive*; there is no ladling out of unrelated facts, and there is an entire freedom from dull mechanical methods."

What the Commissioners saw, both with Mr. K. ten Bruggencate and alone, more than justifies these words of praise.

Besides this the schools are finely equipped for scientific teaching. Their botanical, geological, and zoological museums (in each school), their chemical and physical cabinets, and their laboratories leave practically nothing to be desired, and herein lies part of the secret of their throughness; the pupils get a real acquaintance with scientific facts.

19. *Conclusion.*—The Commissioners were much impressed with the excellence of the Dutch schools, perhaps more with the schools than with the organisation of the system. The difference of the status of the gymnasium and the higher Burgher School has no adequate justification. The division in the gymnasium is too late and has no vital significance, and in this respect the German scheme of Gymnasium, Real-gymnasium, and Oberrealschule has the advantage. There are signs of change, but they are not yet well-defined. The criticism of Mr. Medd that "the Dutch scheme is a little diffuse and lacking in concentration, owing chiefly to the fact that Dutch pupils have to learn one foreign language more than corresponding pupils in France, Germany, and England," did not appear to the Commissioner to command so much attention as the fact that the alternatives for student courses have not been so fully developed as in Germany.

The Dutch system may be thus represented:—



A study of this system and a comparison with the German will reveal the fact that for thoroughness it lacks some of the advantages of the German system. Nevertheless, education in the Netherlands is excellent, and the opportunities in the Higher Burgher Schools for teaching science all that could be wished.[1]

CHAPTER XXV.

[1] The Commissioners are under exceptional obligations to His Excellency Sir Henry Howard, His Majesty's Ambassador at The Hague, to the Netherlands Government, to Mr. K. ten Bruggencate, to Prof. Dr. Winkler, of Amsterdam, and others for very special assistance, for which their thanks are here cordially expressed.

CHAPTER XXV.

Secondary Education in Italy.

[G. H. KNIBBS.]

1. *Introduction.*—Until comparatively recently, the secondary schools of Italy were exclusively classical. Latin was the chief subject of instruction, and Latin literature occupied the prominent place in the curriculum. The grades were (1) grammar, (2) humanity, (3) rhetoric. Later a little philosophy and mathematics found a place, and still later science.

In 1803 the Cisalpine Republic founded the Lyceum (liceo) of Brera in its capital, Milan; and four years afterwards the kingdom of Italy established a school with a lower division of four years, *without Greek* and without mathematics and natural science, but having an upper division of two years, with three sections, viz., (i) mathematics, (ii) natural science, and (iii) jurisprudence. Through Austrian influences, however, the system slowly reverted to the old classic arrangement, with an eight-years' course.

In Piedmont, arithmetic, local history, and geography were introduced in 1840 into this classical type of school. The law of 4th October, 1848, made a division in the higher schools: these were either "classical" or "special" (*i.e.*, humanistic or realistic). By the rejected project of Mameli[1] (1850) it was proposed that the secondary school should again restrict itself to classical education. Instead of accepting this, however, the classical and special schools were retained, the latter now including schools for the teaching of commerce, industry, and art. The special schools were further strengthened by Cibrario[1] in 1853, and by Lanza[1] in 1855 and 1856.

Education in Italy, as it now stands, owes much to Gabrio Casati, who introduced the law of 13th November, 1859.[2] This law discriminated between *classical* and *technical* schools, and tended to establish unity of organisation throughout Italy. It is really the foundation of the present system.

From 1862 onward change after change has been made in the regulations, hours, and programmes of Italian secondary schools. For example, the general order of Boselli for gymnasia and lyceums (dated 24th September, 1889) was changed by the decree of 26th November, 1890, 26th May, 1891, 14th June, 1892, 5th October, 1892, 4th May, 1893, 16th September, 1893, 4th January, 1894, 11th March, 1894, 22nd May, 1894, and by a telegraphic circular of 15th October, 1894.

This rapidity of change, while it indicated unsteadiness and want of that quiet spirit which would have ultimately placed everything on a more satisfactory basis, indicated also intense desire to bring about thorough and satisfactory reform. This is expressed in the words of the Marchese Massimo d'Azeglio, "*fatta l'Italia, bisogna far gl' Italiani.*"[3]

Professor Alessandro Oldrini remarks that amid all the indifference of the wealthy classes of Italy, and the opposition of the apparently degenerate masses, a number of élite souls, thinkers, legislators, and enlightened citizens, responsive to this call, have assumed the ungrateful task of annihilating the popular ignorance, indolence, and superstition, and have constituted themselves a phalanx to assault the existing evils, and thereby to secure a just appreciation of modern civilization, and of its meaning for their historic country.

But while the effort was great the *Minister did not recognise*, says Dr. Luigi Credaro,[4] *that it is an easier matter to mobilise an army, to build a man-of-war, to open-up commerce and industries, or to build a railway, than it is to found a good school (system).*[5] Each Minister, besides lacking the qualifying knowledge, seemed to think that it was his duty to belittle and destroy what his predecessor and political antagonist had accomplished; and when an able educationist—such as Pasquale Villari—came into office, he was superseded before he had time to orientate himself, by those political cataclysms which were the ruin of the school systems.

"It is no wonder," continues Dr. Credaro, "that those who resided in Minerva[6] should issue decrees as variable as the phases of the moon, and that those who had no (special) pædagogical knowledge, should fail to embody in those decrees anything shewing organic development, or an important educational principle."

2. *Recent History of Secondary Education in Italy.*—Before the Casati epoch (1859), the instruction in Italy was wholly in the hands of the ecclesiastic and monastic orders. The law of Casati, however, changed the educational ideal somewhat, and centred the administration in the State, education being divided into three branches, viz.,—

(1) Higher education ("*l'istruzione superiore*").
(2) Classical secondary ("*l'istruzione classica*").
(3) Technical and Primary education ("*l'istruzione technica ed elementare*").

Pupils

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[1] The Minister.
[2] This law enforces public primary education.
[3] Italy itself is made; we now need to make the Italians.
[4] Dr. Credaro was professor of pædagogy at the University of Pavia, and also a member of the Italian Parliament:
[5] Dr. Credaro goes on to say:—"They could not know this: people were called to the office of Minister of Public Instruction, merely because of their parliamentary position, and without the slightest regard to their *technical efficiency for the office*, learned men and writers, who however lacked philosophic and pædagogical education, dramatists, advocates, physicians, etc., people that understood about as much of higher education, as I do of the theatre, advocacy, and medicine."
[6] The Ministry for Public Instruction is housed in a building known as *Minerva*.

Pupils who desired to enter the middle grade of education had perforce to pass through the elementary school of five years, commencing when the sixth year was completed. A pupil had therefore, at 11 years of age, to decide between a classical and a technical education.

The *classical education* had two divisions, the lower five classes constituting one, the upper three the other, each class being one year. The career in the lower grade was completed, therefore, at 16, and in the upper at 19 years of age.

By Casati's law, the *technical education* aimed at preparation for definite branches of the State service, and for commerce, industry, and agriculture. In this there were two divisions also, each, however, of three years' duration; so that the career was completed at either 14 or 17 years of age. The lower division constituted the technical school (*scuola tecnica*); the upper, the technical institute (*istituto tecnico*). In the latter there were sections appropriate to the different callings. In view of the statistics of the subsequent career of those who passed through the lower division, the technical school was changed in 1885, so as to be essentially a preparation for the upper division; this change gave therefore what may be defined as a practical-"realistic" tincture to education, "realistic" being understood in the German sense.

The technical institute was now made of four years' duration, and divided into five sections, viz.:—

(1) General Physico-Mathematical subjects.
(2) Surveying, etc.
(3) Agriculture, etc.
(4) Commerce and Bookkeeping, Accountancy, etc.
(5) Industry.

The first year, however, was common to all the sections, so that the division actually occurred at 15 years of age.

The physico-mathematical section is the progenitor of the modern lyceum ("*liceo*"), and the other sections are the progenitors of the professional schools. Pupils possessing the leaving certificate of the 1st section ("*licenziati*") are qualified for entrance into the similar faculty in the University, and for entrance into the higher Schools of Engineering.

This arrangement made it possible to enter the University on the mathematical and scientific side as early as 18—*i.e.*, after a seven years' course; but on the classical side only at 19—*i.e.*, after an eight years' course.

It is said that, while the pupils of the lyceums shew special aptitudes in some directions—*e.g.*, drawing, calculating, etc.,—later they are beaten by the pupils who take the classical course. The same has been stated to be the experience both of Austria and Germany, and the Commissioners heard this personally; but it is only fair to say that the statement is strongly challenged. The question of the part to be played by ancient languages is one of the highest importance, and the educative function of classical education ought to be thoroughly studied by a comparative method.

3. *Difficulties in the Secondary System of Italy.*—The question of combining the technical school with the lower classes of the gymnasium has been much discussed, and a large number of decrees, plans, and drafts of acts to deal therewith have been called into existence. It is the belief of many able educationists that it will be necessary to give greater unity of form to the secondary system of Italy, not only for economic and pædagogic reasons, but also to increase both its general efficiency and its efficiency as a preparation for the University.

Local and personal difficulties stand in the way of reform, and the general inheritance from the past accentuates them; still, it is believed that they are by no means insuperable.

One of the serious difficulties that have presented themselves in Italy, is the overcrowding of the lyceums by students of very heterogeneous character, who, though they pass on to the universities and higher institutions, are regarded as undeveloped in respect of many of the essential elements which should be concomitants of higher education. To meet this, some of the lyceums, through which most of these crude pupils pass, have framed reformed curricula, reducing the time devoted to science and to Greek by the substitution of mathematics and a modern language in lieu thereof. In how many places this has now been done the Commissioners are unaware, but at any rate at most of the capital cities—Rome, Florence, Milan, Venice, Palermo, Turin, etc.

It is quite impossible in this report to give any adequate acount of the propositions for reform in Italy; they may be obtained from the volumes published by Giuseppe Saredo, about 3.500 pages.[1]

4. *Organisation and Administration of the Secondary Schools.*—To understand the general administration it is necessary to have in view the administrative system of Italy. The larger divisions of the kingdom, of which there are sixty-nine, are known as provinces, and are presided over by a provincial governor, known as the prefect (*prefetto*), appointed by the National Government. The provinces are subdivided into communes (in number 8,020) at the head of each of which is a syndicus (*sindaco*) or mayor. The syndicus, together with the communal council of which he is president, is elected. The provincial and communal jurisdictions are both directly concerned with public education.

The scheme of education is so far unified for the whole kingdom, that the status of a student is independent of the province or commune in which he has been educated. He can commence his education in any part of the territory, and, without inconvenience, delay, or loss of status, complete it in any other part. The details of the administration are sufficiently indicated hereunder.

The secondary schools of Italy may be divided into (1) the Royal or State schools (*scuole governative*), and (2) those that do not belong to the State (*scuole non governative*). The latter, however, may be subdivided again into those (i) who have the right to examine and confer the "licentiate" certificate, and (ii) those that have not. Further, the schools may be provincial (*scuole provinciali*), communal (*scuole communali*), ecclesiastical, or private (*scuole private*). The

[1] Vicende legislative della Pubblica Istruzione in Italia, dall' anno 1859 al 1899, raccolte e annotate da Giuseppe Saredo. Torino, 1901, pp. 586.——Codice della Pubblica Istruzione ordinato a cura di Giuseppe Saredo. Torino, Vol. 1, pp. 671 (1899); Vol. II, pp. 608 (1899); Vol. III, pp. 635 (1900); Vol. IV, pp. 1901.

In the "Vicende legislative" (legislative changes), there are no less than twenty-four sections on proposals in regard to secondary instruction. [§3. L'istruzione secondaria, pp. 152-306.]

The central administration is as follows:—

(1) The Minister (*Il Ministro della pubblica istruzione*).
(2) The Under Secretary (not mentioned in the list of the members of the "*Amministrazione centrale.*")
(3) The High Council (*Il consiglio superiore di pubblici istruzione*).
(4) The Inspector-General of Higher Studies (*L'ispettore generale degli studi superiori*).
(5) The Inspector-General of Secondary Classical Studies (*L'ispettore generale degli studi secondari classici*).
(6) The Inspector-General of Technical and Primary studies, and of the Normal Schools (*L'ispettore generale degli studi tecnici e primari, e delle scuole normali*).

The Higher Council (five) originally consisted of twenty-one members (fourteen ordinary and seven extraordinary), nominated by the King[1], their office lasting seven years. Now the number is thirty-two, exclusive of the Minister, and the office lasts four years[2]. The Minister is the president of the Council. Half of its members are nominated by the Government, the other half are chosen from among the ordinary and extraordinary professors (professors and independent lecturers as they would be called here) of the universities and other institutions of collateral rank,[3] four representing each faculty therein, viz., (i) Philosophy and literature; (ii) Jurisprudence; (iii) Medicine; (iv) Mathematics and natural science. The term of office is now only four years, and *each* year one-fourth of the Council vacates office. Re-election is permitted after one year.

The Council meets, as a rule, twice a year, to consider such matters as proposals for legal reform submitted by the Minister, general regulations of study, the position of the members of the teaching staff, regulations for the appointment of teachers, for appointments to chairs in Universities, etc.; questions of dismissal or suspensions for more than two months, periodical reports as to public instruction, and popular education, and similar matters.

Mere current business is dealt with by a partial council of fifteen members,[4] but the weightier matters by the full council.[5] By a royal decree of 2nd January, 1882, the work of the council is divided into three sections,[5]—one charged with secondary classic education, one with technical, and one with primary, etc. These sections deal with such matters as affect the proposals for establishment of secondary schools in communities or provinces; inspection of state and private schools; questions of closing schools on legal grounds; the proficiency of the teaching staffs of the gymnasia, lyceums, technical schools, and institutes; uniformity in the significance of the official certificates; questions of the retirement of professors after 55 years of age or after thirty years service, where there is doubt as to the value of their continued services,

The committees deal also as judges with disputes as to competency of jurisdiction among those holding lower administrative offices; with questions of supervision, dismissal, etc.; difficulties in regard to ecclesiastical and private teachers; the temporary or complete exclusion of university students. Full sittings of the council deal with questions of text-books and curricula, and proposals for reform, etc.[6]

There was originally (1859) a general inspectorate[7] (*Ispettorato generale*), charged with the supervision of programmes, methods, discipline, etc. Its activity ceased; it was resuscitated; and again quite recently it has been abolished.[8]

The provincial administration is under a Provincial Council ("*un Consiglio provinciale scolastico*").[9] The prefect (*prefetto*) of the province is the head, and the highest professional officers of education are directly under him. *This*, in the opinion of Dr. Luigi Credaro, *is a great evil;* but the system is common, and if only the prefect be a sufficiently cultured man, of large mental horizon, as he ought to be, it is difficult to see wherein the evil lies. Obviously a prefect who had no interest in or knowledge of school-technique, or of education, might be injuriously troublesome.

Art. 1 reads: "The Prefect of the Province superintends the administration of the classical, technical, normal, magisterial, and primary schools, whether public or private."[10] Under him there is an officer known as the "*Provveditore agli studi*," which might, perhaps, be rendered, "Sponsor for all studies." Then the School Council, in addition to the above, is composed of the President of the Royal lyceum, or of one of the Royal lyceums, a physician (who is also a member of the sanitary provincial council), a functionary of the administration of finance, four representatives of the province, and two members of the principal communal Council in the province.

The

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[1] Cod. Pub. Istruz. Titolo I, art. 6.

[2] Legge 17 febbraio, 1881, n. 51 sul Consiglio superiore della pubblica istruzione. (Umberto I.) "Il Consiglio . . . . è composto di trentadue membri, oltre il Ministro che lo presiede."

[3] " . . . Professori ordinari e straordinari dei corpi scientifici sottoindicati e nelle proporzioni seguenti:—
Quattro dai professori della facoltà di scienze matematiche, fisiche e naturali, Istituto tecnico superiore di Milano, scuole di applicazione e sezione di scienze naturali dell' istituto superiore di Firenze.
Quattro dai professori delle facoltà di filosofia e lettere, Accademia scientifico-letteraria di Milano e sezione corrispondente dell' istituto superiore di Firenze; Quattro dai professori delle facoltà di diritto; Quattro dai professori delle facoltà di medicina, sezione di medicina dell'Istituto superiore di Firenze e scuole superiori di veterinaria.
I professori di chimica farmaceutica voteranno nelle facoltà di medicina.
I professori della Scuola di agricoltura di Pisa voteranno nella facoltà di scienze matematiche, fisiche e naturali di quella università." Law of 17 February, 1881, previously referred to.

[4] Legge 17 febbr., 1881. Art. 6. ". . . Una Giunta di quindici membri, scelti dal Ministro tra i consiglieri, provvede alla spedizione degli affari correnti . . .." Art. 7. "Sono riservati al Consiglio plenario,"—etc. [Here follows the list of affairs specially reserved for the full Council.]

[5] Regio Decreto 2 gennaio, 1882, n. 659, che approva il regolamento per il Consig'l, etc. Titolo I, Organizzazione del Consiglio. . . . Le sezioni sono:—(a) Sezione delle scuole secondarie classiche; (b) Sezione dell' istruzione tecnica; (c) Sezione dell' istruzione primaria, magistrale e femminile.

[6] See "Attribuzioni del Consiglio plenario," Titolo II, Art. 6-9; "Attribuzioni della Guinta," Titolo III, Art. 10-15, Legge, 2 gennaio, 1882.

[7] See, Legge 13 novembre, 1859, Degli ispettori generali, Art. 17-22.

[8] See, Il R. Decreto 6 agosto, 1893, n. 568, 18 gennaio, 1894, n. 36. "L'ispettorato generale e stato nuovamente abolito dal R. Decreto 16 maggio, 1895. Nel ruolo organico del Ministero della publica istruzione, approvato con quest' ultimo Decreto, esistono ova soltanto due posti d' ispettore."

[9] The old law is modified by the "Regio Decreto 3 novembre, 1877, n. 4152. Regolamento per l'amministrazione scolastica provinziale." Art. 1-71. There are a great many slight modifications.

[10] *Op cit*: Capo I, Presidienza e composizione dei Consigli provinciali scolastici, e loro adunanze.

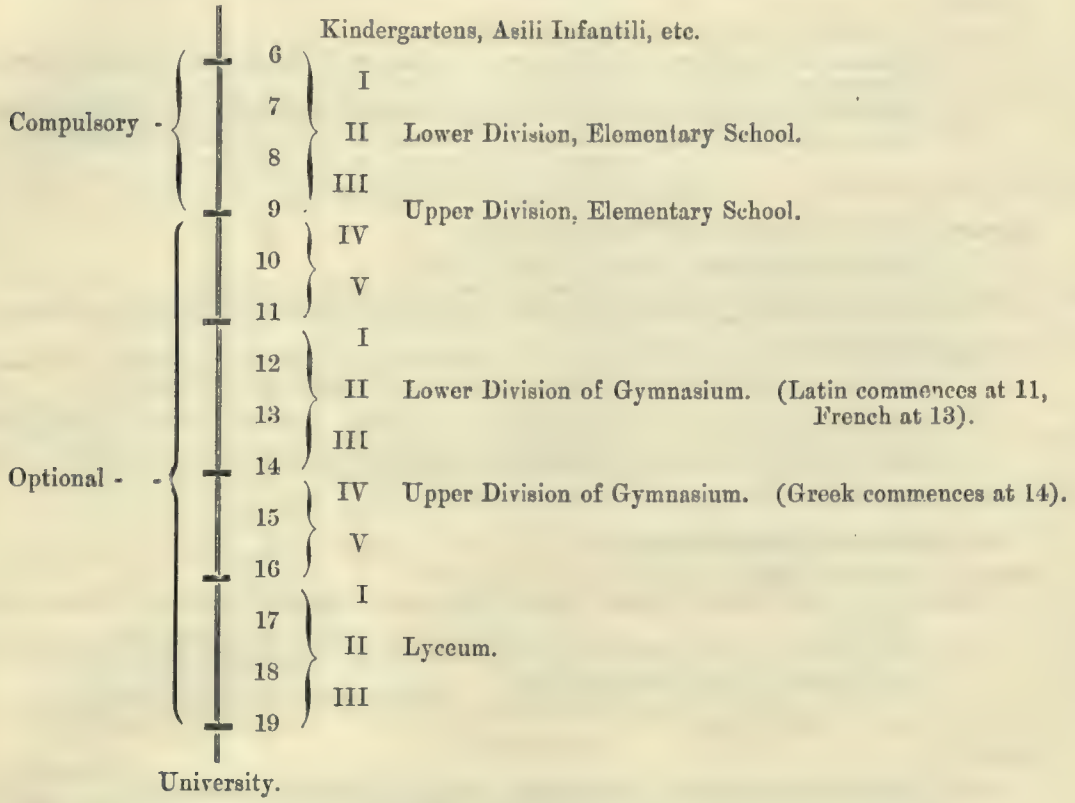
The Sponsor reports to the Ministry, and corresponds with the provincial authorities; he deals with requests to open private schools, determines the dates of public examinations, determines the details of the school calendar, and grants leave, up to ten days, to public teachers in cases of urgency.

The higher technical school (istituto tecnico) is not under the Sponsor.

The Principal of the lyceum and technical institute is known as the President ("*Preside*"); that of the gymnasium, the Director ("*Direttore*").

5. *The Italian Gymnasium and Lyceum.*—In Italy, the gymnasium (*ginnasio*) has a five-year course; the lower division lasting three years (I, II, III), and the higher two years (IV, V). These periods are similar to those in the lower and higher sections of the primary schools. The lower section is obligatory on every child on reaching the age of 6 years; the higher section lasts two years, and is not compulsory. The five years' elementary course is, however, essential for those who desire to enter the gymnasium; then follows the five years' gymnasium course, and, lastly, the three years' lyceum—in all, thirteen years before the pupil is prepared to enter the University.

The Italian system is, therefore, as represented in the following diagram:—



The curricula for these schools are as in the table hereunder:—[1]

Curriculum in the Gymnasium and Lyceum.

Subject.	Gymnasium.					Lyceum.[3]		
	Lower.			Higher.				
	Class I.	Class II.	Class III.	Class IV.	Class V.	Class I.	Class II.	Class III.
Italian...	8	8	8	5	5	5	4	4
Latin	8	8	7	6	6	4	4	4
Greek	...	...	...	4	4	3	3	3
French...	...	...	3	3	3	...	...	...
History and Geography	...	...	...	3	3	3	4	4
"Descriptive" Geography[2]	3	3	3	...	...	...	...	...
Mathematics	2	2	2	2	2	3	3	3
Natural History	...	...	...	2	2	2	2	2
Philosophy	...	...	...	...	...	2	2	2
Physics and Chemistry	...	...	...	...	...	2	2	2
	21	21	23	25	25	24	24	24

[1] See Codice Pubblica Istruzione I, pp. 639, 640.

[2] Geografia descrittiva.

[3] order of the table is changed to agree with the gymnasium.

Th

The instruction is required to be developed somewhat on the lines indicated hereunder :—

6. *Syllabus of instruction in Gymnasium and Lyceum.*—The "limits and subdivision of the matter of instruction in the gymnasium and lyceum" are outlined in the regulations for those institutions under decree of 20th October, 1894.[1]

Italian Language and Literature.

Gymnasium—

I. Reading of prose and poetry—conceptions of and exercises in grammar ; the morphology of the language.
II. The same. Elementary syntax.
III. The same. Advanced syntax.
IV. Reading of prose and poetry—precepts and exercises as regards composition, rhetoric; form of the period, purity and propriety of language, figures of speech ; prosody.
V. Reading of prose and poetry ; precepts and exercises in the various forms of composition in prose and poetry.

Lyceum—

I, II, III. Reading of prose and poetry in each class.
1. Exposition of the *Inferno* ; the history of literature as far as the principal figures in the Renaissance.
II. Exposition of the *Purgatorio ;* history of literature as far as the time of the *Arcadia.*[2]
III. Exposition of the *Paradiso ;* history of literature as far as the death of Manzoni.[3]

Latin Language and Literature.

Gymnasium (Latin commences at 11 years of age)—

I–V. Grammar and exercises in each class as follows :—
I. Regular declensions and conjugations ; graduated reading in Latin.
II. Irregular declensions and conjugations, particles (particelle) ; reading of the classics, prose and poetry.
III. Syntax, concordance and case, use of substantives and pronouns, reading of classic prose and poetry, the elements of prosody and verse (hexameters and pentameters).
IV. Syntax of tense and mood in independent statements ; nominal forms of the verb ; reading of classic prose and poetry ; exercises in prosody, etc. (hexameters and pentameters).
V. Syntax of tense and mood in subordinate statements, indirect statement, reading of classic prose and poetry.

The authors read are the following :—

Class II. Cornelius Nepos, some of the Lives ; Phædrus.
III. Cæsar, de Bell. Gall. ; Cicero, some of the easier Epistles ; Ovid and Tibullus, selected Elegies.
IV. Cæsar, Bell. Civ. ; Sallust, Catalina, Cic. Lælius, or Cato Major, Virgil, Eclogues ; Ovid, selections from the Metamorphoses.
V. Sallust, Jugurtha ; Livy, selections from ; Cicero, one of the Orations ; Virgil, one or more books of the Æneid.

Lyceum—

I–III. Reading of the classics, both prose and poetry, and history of literature.
I. Literature as far as the Augustan era ; exposition as to metrics, and metrical oration.
II. Literature as far as the end of the Empire ; metrics, etc., as before.
III. General repetition of the history of literature.

The authors read are the following :—

Class I. Parts of Livy, of the Æneid, or Virgil's Georgics, or the Odes of Horace.
II. Cicero, de Oratore ; Tacitus, book of ; a part of the Æneid ; Horace, Odes and Satires.
III. Cicero, de Officiio, and parts of his philosophical treatises ; Quintilian, a chapter of Plautus, Captivi and Trinummus ; a selection from Terence ; Horace, some of the Epistles, the Ars poetica.

Greek Language and Literature.

Gymnasium—(Greek commences at 14 years of age).

IV. Grammar and exercises ; reading and writing ; declensions, conjugations of verbs in ω.
V. Grammar and exercises ; conjugation of verbs in all classes of irregular verbs ; formation of the language ; reading and translation of prose classics.

The authors used are as indicated hereunder :—

Class V. Written translations from Xenophon and Lucian.

Lyceum—

I. Grammar and exercises ; principal rules of syntax ; hints on prosody and on the Homeric dialect ; reading and translations of classic prose and poetry ; hints, etc., on the history of Greek literature as far as the age of Pericles.
II. Reading and translation of classic prose and poetry, and hints as to the history of the literature as far as the age of Alexander.
III. Continuation and repetition of the preceding.

The

[1] Regio decreto 20 ottobre 1894, n. 542. Regolamento per i ginnasi e per i licei. Tabella A. *Vide*, Codice pubblici istruzioni. Vol. I, pp. 635–639.
[2] The Arcadia of Jacopo Sannazaro [1458–1530] of Naples. 1504.
[3] [1785–1873.]

The authors used are the following:—

Class I. Xenophon and Homer, reading and translation.
II. The same, then Lysias and Herodotus.
III. Selections from Homer, Herodotus, Plato (the Apology or Crito), and Demosthenes (Oration on the Crown).

French language.

Gymnasium.—(French commences at 13 years of age).

III. Grammar and exercises; pronunciation and orthography; articles and their declension; rules and exceptions regarding the formation of plurals in substantives and adjectives; the feminines of adjectives.
IV. Grammar and exercises; adjectives and pronouns; auxiliary verbs; regular conjugations; irregular verbs; reading of modern French prose.
V. Grammar and exercises; difference between French and Italian in the reflex and auxiliary verbs; defective verbs, verbal adjectives, invariable particles, principal rules of syntax; reading of modern French prose and poetry.

Geography.

Gymnasium.

I. General conceptions and divisions of geography; elements of astronomical and physical geography; summarised description of Europe; summarised description of the Italian region.
II. Geographical description of other parts of Europe.
III. Geographical descriptions of Asia, Africa, America, Australia, and hints regarding the Polar regions.

History and Geography.

Gymnasium.

IV. Ancient history of the East and of Greece; geographical descriptions of individual parts of Italy.
V. History of Italy, as far as the end of the Western Empire; detailed geographical description of other parts of Europe.

Lyceum.

I. Europe, and especially Italy, to the end of the Western Empire, as far as the Italian expedition of the Emperor Arrigo VII [Henry VII].
II. Europe, and especially Italy, from the expedition of Arrigo VII to the treaty of Aquisgrana [Aix-la-Chapelle].[1]
III. Europe, and especially Italy, from the treaty of Aquisgrana to the present time.

Philosophy.

Lyceum.—(Philosophy commences at 16 years of age).

I. Elements of psychology.
II. Elements of logic, with exercises.
III. Elements of ethics.

Mathematics.

Gymnasium.

I. *Practical Arithmetic.*—From numeration to fractions, exclusive of the latter.
II. Ordinary and decimal fractions.
III. Decimal metric system; *complex numbers*[2]—practical rules for extraction of square root; ratio and proportion.
IV. *Rational Arithmetic.*—From numeration to fractions, exclusive of the latter.
V. Theory of fractions. *Geometry.*[3]—Book I, Euclid.

Lyceum.

I. *Algebra.*—From definitions to the solution of equations of the first degree of two unknowns inclusive. *Geometry.*—Euclid, Books II, III, IV.
II. *Algebra.*—Irrational numbers; equations of the 2nd degree; progressions and logarithms. *Geometry.*—Euclid, Books V and VI; measurement of magnitudes; areas of plane rectilineal figures; area of circle.
III. *Trigonometry.*—Circular functions; functional relations between the sides and angles of a plane rectilinear triangle. *Geometry.*—Lines perpendicular and oblique to a plane; vertical and parallel planes; dihedral angles and perpendicular planes; trihedral polyhedral angles; equality of trihedral and of polyhedral angles.
IV. Equality of trihedral angles; prisms and parallelipipeds, their equality and equivalence; pyramids, their equality and equivalence; the surfaces and volumes of prisms and pyramids; surface and volumes of cones, cylinders, and spheres.

Physics and Chemistry.

Lyceum.—(These subjects commence at 16 years of age).

I. Elementary conceptions of physics preliminary to the study of chemistry; elements of chemistry; conceptions of kinematics.
II. The elasticity of solids; mechanics of liquids and gases; elements of acoustics; elements of cosmography.
III. Elements of heat, optics, electricity, and magnetism. *Natural*

[1] 2 May, 1668.
[2] It will be observed that complex numbers are taken at 13 years of age.
[3] Euclid's Geometry is commenced at 15½ years of age.

Natural History.

Gymnasium.—(This subject commences at 14 years of age).

IV. Description and comparison of the vertebrate animals during the first part of the year, and of the angiosperm phanerogams during the second part of the year.

V. Description and comparison of animals and plants belonging to the lower types of the two organic kingdoms; animals in first part of year, plants in second part. Remarks concerning the origin of the more important domestic animals and cultivated plants, and regarding plants and animals noteworthy in virtue of their historical relationships.

Lyceum.—

I. *Zoology.*—Conceptions regarding the structure, functions, and classifications of the animals.

II. *Botany.*—Conceptions regarding the structure, functions, and classification of plants; outlines of mineralogy.

III. Conceptions of physical geography and geology.

It will be seen that the range of subjects is wide, but the grade of teaching in some departments is not as high as in some other countries of Europe, save perhaps in exceptional schools.

7. *Fees for the Gymnasium and Lyceum.*—By the law of 25th February, 1892, No. 7, the school fees demanded are as follows:—

Gymnasium.

	Lire.	£	s.	d.
Admission examination	10	0	8	0
Immatriculation	10	0	8	0
Annual "inscription" for each class	30	1	4	0
License (Licenza) for candidates of the Government gymnasia	40	1	12	0
License for candidates of private or paternal schools	55	2	4	0
Licentiateship of gymnasium (Diploma di licenza ginnasiale)	5	0	4	0

Lyceum.

Admission examination	40	1	12	0
Immatriculation	20	0	16	0
Annual "incription" for each class	60	2	8	0
License (Licenza) for candidates of Government lyceums...	75	3	0	0
License for candidates of private or paternal schools	100	4	0	0
Licentiateship of lyceum (Diploma di licenza liceale)	10	0	8	0

It will be recognised that these fees are very moderate from our standpoint; they, however, must be viewed in comparison with the general cost of living, and ruling rates of salaries, etc.

8. *The Technical School and Technical Institute.*—As the Gymnasium and Lyceum are really two grades of secondary school, not very dissimilar from the German Unter- and Ober- Gymnasium, so the technical "school" and "institute" (*scuola tecnica e istituto tecnico*) are also two grades of secondary instruction, but instruction of a more technical character.

The curriculum hereunder will give a sufficient idea of the subjects taught therein:—

Curricula for the Technical School and Technical Institute.

Subjects.	Technical School.			Technical Institute.			
	Class I.	Class II.	Class III.	Class I.	Class II.	Class III.	Class IV.
Italian	6	6	5	6	5	4	6
French	3	4	3	3	3	2	...
English or German	...	...	...	...	3	5	5
History	2	2	2	3	3	2	...
Geography	2	2	2	3	3	...	...
Mathematics	4	4	3	6	5	5	5
Natural history and Physics	...	2	2	3	3	...	...
	...	...	...	...	...	5	3
Writing and book-keeping	...	...	4½	...	...	...	...
Chemistry lessons	...	...	...	...	...	3	...
„ practice	...	...	...	...	...	...	4
Drawing	4½	4½	3	6	6	4	6
Caligraphy	3	2	2	...	...	...	...
Logic and ethics	...	...	...	...	2	...	...
Civic instruction	...	...	1	...	...	...	...
	24½	26½	27½	30	33	30	29

9. *Development of Subjects.*—The following will give some slight idea as to the developments of such of the subjects as might seem to require special notice:—

Italian School.—Class I—Recapitulation of grammar. II—Elementary syntax. III—Rules of composition. *Institute.*—Class I—Advanced syntax, composition. II—Continuation of the preceding. III—Outlines of the history of literature as far as the 16th century. IV—Literature of the 18th and 19th centuries. In every class there is reading, explanation, and committing to memory of selections from the best authors, and essays.

French School, Class I—Pronunciation, and reading exercises. Vocables. II—Grammar as far as the formation of the tenses; prose reading and easy translations into French. III—The etymology of the language; the reflexive verbs, prose anecdotes, letters, exercises in writing and in conversation.

Institute, Class I—Grammar and syntax. II—Synonyms, every-day phrases, proverbs, etc. III—Oral and written translations from French into Italian, and *vice versa;* exercises in reading and conversation, graduated as to difficulty.

English Institute, Class II—Pronunciation and etymology of language. III—Grammar and written exercises. IV—The same.

German Institute, Class II—General etymology of language. III—Special etymology; the strong verbs. IV—Syntax, every-day phrases, synonyms and proverbs; reading, Lessing and his contemporaries, to the present time; throughout, written exercises.

History School, Class I—Italy, from the most ancient times (754 B.C.) to the Frankish conquest (774 A.D.). II—Italy from this last period to the Spanish ascendancy (1539). III—Italy from the preceding period to the unification under Victor Emanuel II (1878).

Institute, Class I—The Ancient East, Greece, Macedonia, the Roman Empire and its Provinces, Germany, Islam, France. II—The new nations of the middle ages, the German Empire, and the Feudal state, the Monarchies, the ascendancy of the Hispano-Austrian House; rise of France. III—Dynastic wars, the French revolution, reaction, nationality and constitutionalism, to the entry into Rome in 1870.

Geography School, Class I—Commencement of mathematical geography, Italy in general; exercises in cartography. II—Europe; Italy (specially treated), the provinces of Italy (in great detail). III—Other parts of the world.

Institute, Class I—Mathematical, physical, and ethnographic geography; then Europe. II—Africa, Asia, America, Oceania.

Mathematics School, Class I—Arithmetic to fractions inclusive. II—Arithmetic; questions of interest, partnerships, alligations, etc.; plane geometry. III—Plain and solid geometry; algebraic computations.

Institute, Class I—Arithmetic, including negative numbers; equations of the 1st degree, geometry, similarity of figures. II—Square roots, with whole and fractional numbers, algebra, equations of the second degree and logarithms; calculation of surfaces and areas, including the sphere. III—Continued fractions, geometry, including homothetic figures; elements of descriptive geometry; plane trigonometry. IV—Indeterminate equations of the first degree; geometry, the regular polyhedra of Euclid; spherical trigonometry.

Natural History School, Class II—The orders in Botany and Zoology. Class III—Elementary Physics, Chemistry, and Mineralogy.

Institute, Class I—Zoology and Botany. II—Mineralogy and Geology.

Physics Institute, Class III—The principles of Mechanics; motion of fluids and gases, molecular motion, heat; introduction to meteorology, acoustics, optics, electricity and magnetism. IV—The same more fully developed.

Chemistry Institute, Class III—Properties of the elements and of their most important combinations. IV—Qualitative analysis of inorganic bodies (blow-pipe analysis and reagent solutions.

Writing, etc., School, Class I—English fluent writing. II—Documental writing. III—Gothic forms, ornamental writing.

Book-keeping School, Class III—General methods of reckoning and accountancy, set of books.

Drawing.—School. The drawing includes geometrical drawing of geometrical surfaces of every kind and freehand drawing of regular polyhedra from models; freehand drawing of objects and industrial objects from large photographs.

Institute.—Drawing with instruments, the architecture of XV and XVI century; water colour; freehand drawing of plaster of paris architectural fragments; then colouring; leaf-groups, artificial or natural; vases; furniture; art objects, etc.

Civic Instruction.—School, class III. This covers the relation of the individual to the family, to society, the rights and duties of citizens, duties toward neighbours, political rights and responsibilities.

10. *Italian residential schools.*—There are both private and state boarding-schools[1] in Italy. The latter are known as *convitti nazionali.* These are governed by the decree of 18th December, 1898.[2] For girls there are what is known as *istituti e collegi femminili.* In the scholastic year 1900–1901 there were 53 State convetti and 807 private; total, 860, with a total pupilage of 51,227.

In the girls' institutes and colleges about 53,000 are educated yearly (1900–1901). The number under state, provincial, or communal control was 555; 760 are ecclesiastical schools, and 262 are partially subject to ecclesiastical control—this makes a total of 1,577, in addition, of course, to the 860 *convitti* for boys.

These schools and their régimes do not call for special comment.

11. *The Teaching Staff.*—For qualification to teach in secondary schools there is no special State examination in Italy outside the Universities. The University[3] diplomas, however, are required for the higher grades of teaching, These are of two standards: the lower is the *Licenza*, the higher the *Laurea.* The former qualifies its possessor to give instruction in the Gymnasium, technical school, and the seminary for primary teachers. The *Laurea* is required by those who wish to teach in the Lyceum.

In order to qualify for the *Licenza*, a student must have attended a two years' course in "Arts," *i.e.*, Italian literature, Latin and Greek literature, etc.; and a one year's course in theoretical philosophy, comparative history of the classic and Romanic languages (Neolatin), and in ancient and modern history and geography.

The examination involves the following:—(1) An essay on a critical or historico-linguistic subject; (2) a Latin composition (under supervision); (3) an examination of, at least, an hour on other subjects.

For the *Laurea in Literature*, the student must have attended the University for two years longer than in the preceding case; and have for one year attended lectures in Italian, Latin, and Greek literature, ancient and modern history, archæology and philosophy.

For the *Laurea* and *Philosophy* the courses must embrace history and philosophy, theoretical philosophy, ethics, Greek and Italian literature, ancient history, pædagogy, physiology, and one other scientific subject.

The examinations are oral in respect of every subject covered by the lectures, and is conducted by a commission of three members under the presidency of the professor of the subject. These having been passed, the laureate examination follows. This consists of (i) the submission of dissertation; (ii) a disputation thereon, and also upon any three subjects elected by the candidate himself, before a commission of nine members, viz., seven ordinary professors and two others, *i.e.*, extraordinary professors, lecturers, etc.

There are two divisions in the *Laurea* of the Faculty of Philosophy and Literature, viz., (i) literature, (ii) philosophy; and in the *Laurea* of Science four divisions, viz., mathematics, physics, chemistry, and natural history.

The professor or teacher must qualify for the subjects he wishes to teach in the gymnasium or lyceum.

Professor Dr. Luigi Credaro, sometime Professor of Pædagogy in the University of Pavia, now of History and Philosophy, affirms that experience has shewn that the pure scientific studies of the University are an insufficient preparation for the practical activity of the teacher. The young and inexperienced teacher, however great may be his command of his subject, has, in general, no adequate skill as regards its division and development in ordinary teaching. He also has no training or experience in managing a class, and thus often exhausts both himself and his pupils without attaining to anything.

In 1886 instruction schools (*scuole di magistero*) were established, which, however, kept scientific and theoretical qualification more in view than practical didactic skill. The Minister in 1896 (Villari) gave these schools an almost exclusively practical tendency.

The aim of a *scuola di magistero* is to give a practical knowledge of school discipline, of method, especially as regards the extent and limits of each subject as it must be treated in secondary schools, and to afford practice in teaching. The best text-books and material of instruction are also matters about which the practising students acquire information.

The lectures in these schools extend over the following range, viz, the Italian, Latin, and Greek literature, ancient and modern history, geography, philosophy, pædogogy, general didactics, Greek and Latin grammar.

In the mathematico-physical faculty the lectures extend over physics, chemistry, natural history, mathematics, general didactics.

The students attend these courses for at least two years, and in general at the same time as they are passing through their subjects at the University.

At the close of the course they pass an examination consisting mainly of a lesson in some subject and questions as to method. The diploma can be issued only to one who possesses already the Laureate, and it confers a special right to subsequent appointment as a professor in the secondary schools.

12.

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[1] State schools are *Scuole governative*, and private schools, *Scuole private* or *non-governative.*

[2] Regio decreto 18 Dicembre, 1898, n. 588, che approva il regolamento per i convitti nazionali. See, codice della pubblica istruzione, Vol. IV, p. 1–39.

[3] By the law of 16 Febr., 1861, No. 82, Art. 5, the instruction in the University is comprised under five faculties,—(i) philosophy and literature; (ii) jurisprudence; (iii) mathematical science; (iv) natural science; (v) medicine.

12. *Educational Difficulties in Italy.*—Criticisms as to illiteracy[1] in Italy are often made in ignorance of the nature of the difficulties which beset the efforts of the Government to extend popular education. The following shews the remarkable illiteracy still characteristic of the country, and at the same time the effect of three decades' effort:—

Evidence of Illiteracy—	1871.	1899.
Inability to sign marriage register	68 per cent.	42 per cent.
Army conscripts unable to sign roll	57 „	34 „
Inability to sign navy roll	66 „	50 „
Mean	64 „	42 „

This illiteracy decreases as one goes north; it is also much less marked in towns. The illiteracy is reduced nearly to one half by the army elementary schools. In Naples, Sicily, Calabria, etc., it is remarkable, sometimes attaining to 95 per cent., and in such places the dialect spoken differs very markedly from Italian.

This difference of dialect is not confined to the illiterate. Persons of education and fortune regard the speaking of the *lingua toscana* as somewhat affected, and retain the local dialect. This difference is so marked that a teacher from Florence (Tuscany) would not do for Naples, nor would a Roman be efficient in Genoa.[2]

That the unification of Italy is but recent goes far to explain the failure to attain to lingual uniformity, and this language-difficulty makes the first steps in educational progress somewhat arduous.

Another difficulty is the enormous number (seven millions) of "*contadini*"—the peasants or rustics—who are extremely poor and without ambition, whose progenitors were contadini, and whose children assuredly will also be contadini.

13. *Conclusion.*—It may be mentioned, in conclusion, that the school equipments seen, while by no means equal to those of Germany, France, or Switzerlend, were nevertheless very good.

Modern effort in Italy is to attain a more real uniformity of organisation, and to improve the professional education of teachers.

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[1] An illiterate is known as an "*analfabeta.*"

[2] The differences of dialect are so great that, to be understood, a teacher must often use the local dialect.

CHAPTER XXVI.

CHAPTER XXVI.

Secondary Education in Russia.

[G. H. KNIBBS.]

1. *Introduction.*—The opening of the first Gymnasium in Russia dates back as far as 1725, when such an institution was established in St. Petersburg under the direction of Professor Theophil Siegfried Bayer, pro-Rector of the Cathedral School of Königsberg, and a Professor of Antiquities.

Just thirty years afterward a second Gymnasium was opened in Moscow. This had two sections, viz., one for the children of nobles, the other for the children of persons of lower positions. The third was opened in Kasan in 1758, because it was deemed that two Gymnasia were not adequate for the whole of Russia for the purpose of preparing students for the University. This last was, however, closed again in 1789. The pupils of the Kasan Gymnasium were found to be very indifferently educated, and under the circumstances it was thought the amount paid for their education was excessive. The total per annum was £146 10s. (about) for no less than ten teachers. Times have changed.

A number of middle schools were established somewhat later, and from 1804 were gradually transformed into Gymnasia, the statute governing the whole matter being published during the reign of Nicholas I (1796–1855). On the 14th May, 1826, a Commission met, consisting of the Minister, Admiral Schischkoff, Count Lieven, Privy Councillors Uvaroff and Speranski, State Councillor Storch, and Count Stroganoff. They urged the introduction of both Latin and Greek as obligatory subjects in the curricula, Privy Councillor Uvaroff, however, *objecting to the Greek being made obligatory.* The Czar, on looking through the minutes of the ten sittings of the Commission, expressed his doubt as to the utility or purpose of Greek as an obligatory subject. England, France, and Germany were cited as examples supporting the study of Greek. It was finally introduced in a somewhat half-hearted way. In 1825, before the reform, there were 7,600 pupils in the Gymnasia; in the beginning of 1850, 18,000; in 1893, 62,434; and 23,903 in the Realschools.

But to return somewhat: it may be mentioned that the "classics" question has played some part in the development of Russian schools, which may be briefly referred to.

2. *The question of Greek in Russia.*—In the beginning of the school-year 1851–2, Greek was taught in forty-five out of the seventy-four gymnasia then existing in Russia. Up to that time Real-schools of the present type did not exist. In the year mentioned a triple division of the Gymnasia was made. One section had a special course in Jurisprudence for those who entered the Civil Service; a second section, in which Mathematics and Natural Philosophy were given prominence, prepared for the Military Service; while a third concerned itself wholly with preparation for the University. This change brought about a difference in the attitude to Greek. In only five of the forty-five Gymnasia did Greek remain obligatory.

In 1864, Greek took a stronger position. The Gymnasia became 7-class schools, and, though the Jurisprudence course remained, entrance into the University took place only in the case of those who passed through the Classical Gymnasium. For practical and technical careers, special schools, viz., those called Realschools in Germany, were opened.

Up to 1864 there was really only one type of middle schools in Russia, if we exclude the Military schools. They had a special organisation, and were on the whole much more satisfactory than the Gymnasia. In 1871 the reform of the middle schools was completed. The Gymnasium became an 8-class school, and the Jurisprudence course was excluded. The hours devoted to the classical languages were increased. Many new Gymnasia and pro-Gymnasia with six and four classes were founded, even in insignificant towns. In the same year also the Realschools were established, many towns possessing both a Gymnasium and a Realschool.

It is said that the Gymnasium stood much higher during the Ministry of Count Tolstoi than it did six or seven years ago, but quite recently there has been considerable improvement again.

3. *Organisation.*—The organisation is as follows:—At the head of the Educational System stands the *Minister*; next to him the *Curator*, who is the Administrator of an Educational District. European Russia, including the Caucasus, is divided into eleven such districts, the Curator's head-quarters being—(1) St. Petersburg; (2) Moscow; (3) Kasan; (4) Orenburg; (5) Kharkoff; (6) Odessa; (7) Kieff; (8) Wilno; (9) Warsaw: (10) Riga; (11) Tiflis.

At the head of the *Gymnasium* is the "*Director*," selected by the Curator, and appointed by the Minister. At the head of a *Pro-Gymnasium* is a so-called "*Inspector*,"[1] nominated by the Director.

The Director is obliged to give instruction in his own subjects, but it is said that this need not exceed eight hours per week. In the first Realschool of St. Petersburg twelve hours a week are, however, given in mathematics by the Director, and that is about the usual time devoted.

In every Gymnasium and Realschool, the chief assistant and representative—when necessary—of the Director is an "Inspector"; the latter is responsible for the general discipline of the pupils. Directors are usually appointed from the staff of "Inspectors," but sometimes direct from the teaching staff. The teachers are dependent, to a great extent, on the good opinion of the Director and, absolutely, upon

[1] These terms are rendered in Russian almost exactly as spelt in English.

upon the Curator, and can be appointed or discharged, sent from one town to another, as seems to him fit. A teacher of four years' standing in a Gymnasium or Realschool is of Rank VIII in the service (*i.e.*, College Assessor). He then passes through the grades—Aulic Councillor, Collegiate Councillor, State Councillor (Rank XIV), which is attained after twelve years' service.

At any rate, until quite recently, this was about the limit that a teacher could reach. Not unfrequently, his position, after attaining to the pinnacle, was seriously altered for the worse, even to the extent of a fall of 50 per cent. in his salary.

The number of hours of instruction was rarely less than twelve, and might be anything between twelve and thirty hours weekly. The future of any teacher is said also to be uncertain. There is no general pension system in Russia, but in St. Petersburg, Moscow, Riga, and Reval, pensions follow after thirty-five years' service. In Kieff and Kharkoff the pension is about two-thirds of the preceding cities. In Warsaw it is about two-thirds greater, and in the Caucasus there are higher pensions. Every five years the commencing pension is raised a fifth. Widows without children receive half pension; with one child, two-thirds; with two children, five-sixths; with three or more children, the full pension of the husband; an orphan receives a fourth, and four or more, the whole pension of the father.

4. *Curriculum of the Gymnasium.*—The curriculum in Russia is moulded much on the German lines. The programmes for 1890 for the Gymnasia were as follows:—

Curriculum in Russian Gymnasia.

Subjects.	Classes and Hours.								Totals.	In 1871.
	I.	II.	III.	IV.	V	VI.	VII.	VIII.		
Religion	2	2	2	2	2	2	2	2	16	13
Russian	5	4	4	3	3	3	3	3	28	24
Logic	...	...	...	...	...	...	...	1	1	1
Latin	6	6	5	5	5	5	5	5	42	49
Greek	...	...	4	5	6	6	6	6	33	36
Mathematics	4	4	3	4	4	4	3	3	29	31
Physics	...	...	...	...	...	2	3	2	7	6
Geography	2	2	2	2	...	...	...	...	8	10
History	...	...	2	2	3	2	2	2	13	12
French	...	3	2	3	3	2	3	3	19	19
German	...	3	3	3	3	3	2	2	19	19
Caligraphy	2	2	1	...	...	...	...	...	5	5
Drawing	2	2	1	...	...	...	...	...	5	0
Totals...	23	28	29	29	29	29	29	29	225	225

The final column gives the hours in the 1871 programmes for the same subjects. The programmes obtained in St. Petersburg during the Commissioners' stay differ only by including the Logic with the Russian—that is to say, the programme is really identical.

Comparing the two, it will be seen that Religion and Russian are *increased*, the former 3 and the latter 4 hours per week; for the whole eight classes, Latin is *reduced* 7 hours, Greek 3, mathematics 2, geography 2. Physics and history are each increased one hour. The total hours remain the same. The programmes received in St. Peterburg bore the date 1898.

5. *Curriculum in Russian Real Schools.*—The Realschool has an ordinary and a commercial division. The following is a Realschool programme:—

Curriculum in Rnssian Real Schools, 1890.

Subjects.	Classes and Hours.				Ordinary Division—Classes and Hours.			Commercial Division—Classes and Hours.		Totals.	
	I.	II.	III.	IV.	V.	VI.	VII.	V.	VI.	Ordinary.	Commercial.
Religion	2	2	2	2	2	2	2	2	2	14	12
Russian	6	5	4	3	3	3	4	3	3	28	24
German...	6	6	4	3	4	4	5	6	6	32	31
French	...	4	3	4	3	3	...	5	5	17	21
Geography	2	2	2	2	...	2	2	...	2	12	10
History	...	...	2	2	2	4	4	2	2	14	8
Mathematics	4	5	5	5	5	4	3	2	3	31	24
Physics	...	...	...	2	3	3	2	3	3	10	8
Natural Science	...	...	2	2	3	...	2	3	...	9	7
Drawing	3	3	3	3	3	3	3	...	...	21	12
Geometrical Drawing	...	...	2	2	2	2	2	...	...	10	4
Caligraphy	2	2	...	...	...	...	...	...	...	4	4
Commercial Correspondence and Bookkeeping	...	...	...	...	...	...	...	...	...	0	8
Total	25	29	29	30	30	30	29	30	30	202	173

Second Programme, Russian Realschool, 1898.

Subjects.	Classes and Hours.										
	Preparatory	Ordinary Division.							Commercial Division.			Supplementary Class.
		I.	II.	III.	IV.	V.	VI.	Total.	V.	VI.	Totals.	
Religion	4	2	2	2	2	2	2	12	2	2	12	2
Russian	6	5	5	4	4	3	3	24	3	3	24	4
German	...	6	6	5	4	3	3	27	3+2	3+2	31	5
French	...	...	5	5	4	2	2	18	2+1	2+3	22	...
Geography	...	2	2	2	2	...	2	10	...	2	10	2
History	...	...	...	2	2	2	4	10	2	2	8	4
Mathematics	6	3	4	4	6	5	6	28	4	3	24	3
Physics	...	...	...	...	...	4	4	8	4	4	8	2
Natural History	...	...	...	2	2	3	...	7	3	...	7	2
Drawing	2	4	4	2	2	4	2	26	...	...	16	3
Modelling...	...	...	...	2	2	2	2					2
Geometrical Drawing	4	2	2	...	...	...	...	4	...	...	4	...
Commercial Correspondence, etc.	...	...	...	...	...	...	...	...	4	4	8	...
Totals	22	24	30	30	30	30	30	174	30	30	174	29

6. *Other Schools.*—While referring to the Realschools, it may be mentioned that Russia has a special type of school which expresses a higher degree of combination between general and technical education than is to be found in other places visited by the Commissioners.

The transformation of one type of school into another will afford an interesting illustration of this combination. The Realgymnasium of Lodz, originally on the German Model, was changed in 1869 to a "Higher School of Crafts." This in its turn was transformed on 1st July, 1889, to a "School of Industries and Manufactures." This school is specially intended to provide at the same time both general instruction, and the special theoretical and practical knowledge necessary for mechanicians, or for experts dealing with the chemistry of textile fabrics.

School of Industries and Manufactures, Lodz.

Subjects.	Classes and Hours.								Totals.	
	I.	II.	III.	IV.	V.		VI.		VII.		
					C.	M.	C.	M.	C.	M.[1]	C. M.
Religion	2	2	2	1	1		1		1		10
Russian	6	5	5	3	3		3		3		28
Mathematics	4	6	6	6	5		5		...	...	32
German...	5	5	4	3	3		2		...	...	22
Geography	3	2	2	3	...		...	...	...	...	10
History	...	2	2	2	3		...	...	...	...	9
Natural History	2	2	2	2	2		...	...	...	...	10
Physics	...	...	...	3	2		3		2		11
Chemistry	...	...	...	4	...	5	...	5	...	...	4 14
Mechanics	...	...	...	...	4	2	4	2	4	...	12 4
Chemical Technology	...	...	...	...	...	...	...	...	...	5	... 5
Dyeing	...	...	...	...	...	...	...	3	...	3	... 6
Weaving, etc.	...	...	...	...	...	...	4	...	4	...	8 ...
Mechanical Technology ...	...	...	...	...	2	...	2	...	...	...	4 ...
Caligraphy	2	1	1	...	...		...		...		4
Drawing	4	4	4	4	2		2		2		22
Linear Drawing	...	2	2	4	4		4		4		22
Practice. Chemical Laboratory ...	...	...	...	...	2	10	...	10	...	...	2 20
Practice. Applied Chemistry ...	...	...	...	...	...	6	...	6	...	...	... 6
Practice. Dyeing	...	...	...	...	...	...	...	...	...	26	... 26
Practice. Mechanical Workshops ...	...	...	...	...	8	...	6	...	16	...	30 ...
Practice. Weaving	...	...	...	...	...	...	10	...	10	...	20 ...
Totals	28	31	32	35	42–43		46–46		46–46		206–261

[1] M. denotes Mechanicians. C. denotes Chemists.

It is not proposed to deal here *in extenso* with this type of school; it is sufficient to indicate one or two Russian methods of meeting the need of practical education. The second example is the—

Curriculum of Russian Schools of Commerce of Seven Classes.

Subjects.	Classes and Hours.							Total
	I.	II.	III.	IV.	V.	VI.	VII.	
Religion	2	2	2	2	2	2	1	13
Russian	6	5	4	4	3	2	2	26
German	9	4	4	4	3	3	3	30
French	...	8	5	5	4	3	3	28
Arithmetic	4	5	3	...	...	...	...	24
Algebra	...	...		2	2	2	...	
Geometry et Trigonometry	...	...	2	2	2			
Geography	2	2	2	2	...	...	...	8
History	...	...	2	3	2	3	...	10
Natural History	...	...	4	2	3	...	...	9
Physics	...	...	...	2	1	4	...	7
Drawing	4	4	2	2	1	...	...	13
Chemistry	...	...	...	...	3	2	...	5
Merchandise	...	...	...	...	2	2	4	8
Commercial Arithmetic	...	...	...	...	2	2	...	4
Bookkeeping	...	...	...	...	...	3	5	8
Correspondence	...	...	...	...	...	...	1	1
Commercial Geography	...	...	...	...	...	2	2	4
Political Economy	...	...	...	...	...	...	3	3
Law	...	...	...	...	...	...	3	3
Experiments: Chemical and on Merchandise	...	...	...	...	...	...	4	4
Totals	27	30	30	30	30	30	31	208

7. *Example of a Time-table.*—The table here appended is the time-table for 1902–3 of the First Realschule of St. Petersburg. The lowest class is 1B. The first column denotes the Subjects. (0). They are:—

(1) Divine Religion.
(2) Russian Language.
(3) German Language.
(4) French Language.
(5) Geography.
(6) Mathematical Geography.
(7) History.
(8) Drawing.
(9) Modelling.
(10) Mathematics.
(11) Physics.
(12) Natural History.
(13) Commercial Science.
(14) Geometrical Drawing.
(15) Singing.

The second column gives the names of the *teaching staff* (16). For example, under the head of Religion the teachers are, as far as the titles can be rendered in English, Archdeacon Kiriloff (17), Priest Smirnoff (18), Deacon Michaelovski (19). The Inspector (20) and the Director (21) are referred to by title and not by name.

The letters (M), (T), (W), (Th), (F), (S), denote, of course, days of the week, and the column of totals (22), the number of hours given by each teacher.

The time-table referred to will be found on the next two pages.

РОСПИСАНІЕ УРОКОВЪ

Въ С.-Петербургскомъ Первомъ Реальномъ Училищѣ

на 1902—1903 учебный годъ.

Предметы. (0)	Фамиліи преподавателей. (16)	Понедѣльникъ (III)					Вторникъ. (IV)					Среда. (W)					Четвергъ. (VI)					Пятница (V)					Суббота. (S)					(22) Всего
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
Законъ Божій. (1)	Прот. Кирилловъ. (17)				доп	6 *a*				6*b*VI	6 *a*																			доп	6*b*VI	6
	Свящ. Смирновъ. (18)		3 *a*	3 *b*	1 *a*	4 *a*	3 *a*	5 *a*	2 *a*	4 *b*	2 *b*			4 *a*	2 *b*	1 *b*	4 *b*	1 *a*	5 *a*	5*b*V	3 *b*								1 *b*	2 *a*	5*b*V	20
	Діак. Михайловскій. (19)			пр.											пр.										пр.				пр.			4
Русскій языкъ. (2)	Князевъ.			6*b*VI	6 *a*	доп	4 *b*	доп.	4 *a*	5 *a*	5*b*V	6 *a*	5*b*V	доп.	5 *a*	4 *b*			4 *b*	6*b*VI	4 *a*			4 *b*	4 *a*	доп.	5*b*V	6*b*VI	5 *a*	6 *a*	4 *a*	24
	Глѣбовскій.	1 *b*		1 *a*	2 *b*		2 *b*	1 *a*		2 *a*	1 *b*	2 *a*		1 *b*	1 *a*	2 *b*	1 *a*	2 *b*		2 *a*	1 *b*	1 *b*	1 *a*		2 *a*		2 *a*		2 *b*			20
	Ивановъ.	3 *a*	3 *b*												3 *b*	3 *a*	3 *a*	3 *b*				3 *a*	3 *b*									8
	Кусовниковъ.				пр.					пр.						пр.			пр.					пр.				пр.				6
Нѣмецкій языкъ. (3)	Витманъ.	6*b*VI	6 *a*	1 *b*	4 *b*		1 *a*	1 *b*	4 *b*	4 *a*		1 *b*	6*b*VI	1 *a*	4 *a*		6 *a*	4 *a*	6*b*VI	1 *a*		1 *a*	6 *a*	1 *b*	4 *b*		1 *b*	4 *a*	1 *a*	4 *b*		24
	Нейманъ.	2 *a*	доп	2 *b*	3 *b*	3 *a*	3 *b*	2 *a*	2 *b*			3 *b*	доп.	3 *a*			2 *a*	3 *a*	3 *b*	2 *b*	доп	3 *b*	3 *a*	доп	2 *b*		доп.	2 *a*	3 *a*			23
	Теттенборнъ.				5 *a*	5*b*V	5 *a*	V									5*b*V	V							5 *a*	5*b*V						8
	Лямбекъ.						VI															VI										2
Француз. языкъ.	Гобаръ.	3 *b*	5*b*V	3 *a*	VI	5 *a*	4 *a*	4 *b*	6*b*VI	3 *a*	3 *b*	4 *b*	3 *a*	3 *b*	5*b*V	VI	4 *a*	6 *a*	V	3 *b*	3 *a*	4 *b*	VI	5 *a*	3 *a*	4 *a*	4 *a*	4 *b*	6*b*VI	3 *b*	3 *a*	30

	Колумбусъ.	4 *b*		4 *a*									6 *a*						4 *a*	4 *b*			6 *b*				6 *a*					6
	Ковалевскій.		6 *b*																													2
Матем. географія. (6)	Егуновъ.								доп.									доп														2
Исторія. (7)	Массальскій.			доп.	4 *a*	6 *b*	6 *a*	3 *a*	5*bV*	доп.	6 *b*	VI	3 *b*	4 *b*	доп	6 *a*		6 *b*	6 *a*	5 *a*	5*bV*	4 *a*	доп	6 *b*	VI	6 *a*		5 *a*	4 *b*	3 *a*	3 *b*	26
	Глѣбовскій.		1 *b*						1 *a*				2 *b*						1 *b*					2 *a*				2 *b*		1 *a*	2 *a*	8
Рисованіе. (8)	Преображенскій.	6 *a*	4 *a*	5 *a*	5 *b*	2 *a*	6 *b*	6 *a*	пр.	5 *b*	5 *a*		4 *b*	пр.	6 *b*		5 *a*	5 *b*	доп.	4 *a*	4 *b*	доп	2 *a*	2 *b*	5 *b*		2 *b*	доп.		5 *a*		25
	Стадницкій.								1 *b*	1 *a*	3 *a*							1 *b*	1 *a*						3 *a*	3 *b*		3 *b*				8
Черченіе. (9)	Егуновъ.					4 *b*		5 *b*					5 *a*		4 *b*	4 *a*			5 *b*		5 *a*									4 *a*		8
	Яновичъ.				6 *b*				6 *a*								6 *b*							6 *a*								4
	Преображенскій.											3 *a*				3 *b*										3 *a*			3 *b*			4
Математика. (10)	Директоръ. (21)	доп.								6 *a*	доп	6 *b*		6 *a*		доп				6 *a*	6 *b*	6 *b*							6 *a*	6 *b*	доп.	12
	Егуновъ.	4 *a*	5 *a*	4 *b*	3 *a*		5 *b*			3 *b*	4 *a*	5 *b*		5 *a*				5 *a*		3 *a*		5 *b*	4 *b*	4 *a*	3 *b*	5 *a*	5 *a*	5 *b*	5 *b*		4 *b*	20
	Яновичъ.		2 *b*	2 *a*		3 *b*		4 *a*		2 *b*	4 *b*	доп	4 *a*	2 *a*	3 *a*	6 *b*		4 *b*	2 *a*	доп.	6 *a*	2 *b*	4 *a*		6 *b*	4 *b*	3 *b*	3 *a*	2 *a*	2 *b*	6 *a*	24
	Кусковъ.				1 *b*	1 *a*									1 *b*	1 *a*									1 *a*	1 *b*				1 *b*	1 *a*	8
	Кусовниковъ.		пр.					пр.					пр.					пр.					пр.				пр.					6
Физика. (11)	Ковалевскій.	5*bV*		6 *a*				6*bVI*	5 *a*			5 *a*		6*bVI*	6 *a*	5*bV*						6 *a*	5 *a*	5*bV*	доп	6*bVI*	6*bVI*	6 *a*	доп.	5*bV*	5 *a*	18
Естествовѣдѣніе. (12)	Кричагинъ.	5 *a*	4 *b*	5*bV*	2 *a*	2 *b*	доп	3 *b*	3 *a*			4 *a*	1 *a*	5*bV*	2 *a*	5 *a*	3 *b*	доп	2 *b*			5 *a*	5*bV*	3 *a*	1 *b*	1 *a*	4 *b*	1 *b*	4 *a*			24
Коммерч. науки. (13)	Колумбусъ.		VI		V	VI	V			V	VI	V			VI		VI	VI			VI	V		VI	V			V	V	VI		17
Чистописаніе. (14)	Стадницкій.											1 *a*	1 *b*										1 *b*	1 *a*							4
	Кусовниковъ.										пр.									пр.					пр.				пр.			4
Пѣніе. (15)	Бирючевъ.					пр.				1 *b*	1 *a*														2 *a*					2 *b*	5

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8. *The Scientific Equipment of Russian Schools.*—The apparatus and general equipment for teaching chemistry, physics, natural history, etc., in the schools of St. Petersburg seen by the Commissioners, left little to be desired. Even in the Xénie Institute for ladies, the equipment was very thorough. Of course, science subjects cannot be effectively taught without such equipment.

A glance at the time-table previously referred to will shew that the teaching is by specialists. For example, *Physics* (11) is taught by Kovalevsky, 18 hours a week; the only other subject taught by the same professor is *Geography*, 2 hours a week, *i.e.*, 20 hours in all. Natural history is taught by Kritschagin, 24 hours a week; he teaches no other subject. Kousovnikoff teaches Mathematics, 6 hours, and Geometrical Drawing, 4 hours—10 hours in all.

In the type of school where both general and *technical* education are given, the equipment is astonishingly good, and the work actually done by the pupils *excellent*. Lads trained in these, recognise that they are differentiated from the ordinary and relatively ill-educated workman. These schools, however, are developing a high type of Russian workman—intelligent and skilful in the highest degree.

Further reference will be made to these in dealing with technical education.

9. *Conclusion.*—The Commissioners were impressed with the fact that the equipments to be found in Russian secondary schools were incomparably better than any seen in this State. The general régime calls for no special comment. As far as could be judged by actual inspection, and from conversation with M. Kovalevsky, an educational expert, deputed by the Minister to accompany the Commissioners, and with the professional staff, the realistic and scientific elements in the teaching are of a very high order.

CHAPTER XXVII.

CHAPTER XXVII.

Secondary Education in Switzerland and Swiss Educational Systems.

[G. H. KNIBBS.]

1. *Introduction.*—That the features of Secondary Education in various parts of Switzerland should exhibit differences is hardly a matter for surprise, when it is remembered that it is divided into cantons, which are linguistically either French, German, or Italian. A slight indication of the secondary system of two French-speaking cantons (Geneva and Vaud) was given in Chapter V of the Interim Report, see pp. 33–36, pp. 48–50. In that report it served the purpose of revealing something of the general educational conceptions of the Swiss, and so brought into clearer relief the significance of their primary system.

It may be mentioned that in some parts of Switzerland even secondary education is gratuitous, not only to the citizen, but even to the foreigner! This is an evidence of liberality of spirit which is matched only by some States of America.

2. *The Place of Secondary Education in the Swiss System.*—The system of secondary education in Switzerland includes schools which may be described as higher primary as well as secondary schools proper. Thus, one finds schools described as "*Ecoles secondaires*," with courses ranging from one to six years.

These secondary schools are very variously named in the different cantons, or even in any one canton. Thus, middle schools are known as cantonal schools (*Ecoles cantonales*), and have such subdivisions as the progymnasium and gymnasium (*progymnase et gymnase*). Then there are higher schools (*écoles supérieures*), lyceums (*lycées*). Other middle schools (*Mittelschulen*) are known as *Sekundarschulen*. Then there are *Gymnasien*, *Realschulen*, *Lateinschulen*, *Ecoles régionales*, *Bezirksschulen*, *Scuole Maggiori*, etc.

According to the return for 1900 (published Zurich, 1901[1]) the total number of secondary schools in Switzerland was as follows:—[2]

Zurich	94	Obwalden	1	Soleure	16	Appenzel Int.	2	Tessin	37
Berne	75	Nidwalden	4	Basel (city)	4	St. Gall	35	Vaud	21
Lucerne	29	Glarus	11	Basel	13	Grisons	28	Valais	6
Uri	6	Zug	7	Schaffhouse	9	Aargau	66	Neuchatel	7
Schwyz	10	Fribourg	18	Appenzel Ext.	10	Thurgau	29	Geneva	11

Total, 549.

To understand the nature of secondary education in Switzerland, it is desirable to exhibit some features of the educational scheme of a few of the different cantons. That will more clearly reveal the differences between the cantons, and the trend of educational effort in a country the traditions of which are, as pointed out in the Interim Report, more accordant with those of Australia than is the case in many other countries.

3. *Organisation of Education in the Canton of Zürich.*—The following is the organisation in Zürich:—

Infant Schools and Kindergartens (*Kleinkinderschulen and Kindergärten*).

These are not State schools, but are private, or are organised by the communities.

Primary Schools (Primarschulen).—The Primary School is obligatory. In some form, the obligation of school attendance lasts till the age of 15 or 16 years. Thus, this period may be constituted as follows:—

Obligatory Day School (*Alltagsschule*). 44 weeks per year.	Elementary School (*Elementarschule*).	I,	6–7	18–20	hours per week.
		II,	7–8	21–24	„ „
		III,	8–9		
	Real School (*Realschule*).	IV,	9–10	24–27	„ „
		V,	10–11		
		VI,	11–12		
Complementary Schools	Complementary School (*Ergänzungsschule*), or,	VII,	12–13	8	„ „
		VIII,	13–14		
		IX,	14–15		
	School for Singing (*Singschule*).	VII–X,	12–16	1	„ „

Manual Instruction.—This is given as follows:—

Manual Instruction. 44 weeks per year. *Girls.*	Optional in Class	III,	3 hours per week.
	Obligatory in Class	IV–VI,	6 „ „
	In Complementary School, optional,	VII–IX,	3 „ „
	In Secondary School, optional,	VII–IX,	3 „ „

Boys.—Organised communally, with State subsidies. The period is generally 10–15 years of age; courses, from 18–30 hours weekly.

Secondary

[1] See Jahrbuch des Unterrichtswesens in der Schweiz, 1900 (14er Jahrgang), p. 170.

[2] For the information obtained the Commissioners desire to express their appreciative thanks to Dr. Guillaume of Berne, to the Education Departments of the various cantons, and to their officers. Colonel Pingoud, Prefect of Lausanne, most kindly supplied a large amount of information as to the educational system of the Vaud canton.

Secondary Schools.—The so-called secondary schools are of the nature rather of higher primary schools.

Secondary Schools. (*Sekundarschulen.*) 44 weeks per year. Optional. I, 12–13 / II, 13–14 / III, 14–15 — 36 hours per week maximum.

Besides these, there are continuation schools, organised as follows:—

Continuation Schools (*Fortbildungsschulen*).—These comprise what are called professional (*berufliche*) schools, viz.:—

Industrial (*gewerbliche*) schools.
Agricultural (*landwirtschaftliche*) schools.
Commercial (*kaufmännische*) schools.

Middle Schools.—What are called Middle Schools (*Mittelschulen*) are represented by the following:—

Middle Schools (*Mittelschulen*).

- Lower Gymnasium (*Unteres Gymnasium*). 41 weeks per year. — VII or I, 12–13 / II, 13–14 / III, 14–15 / IV, 15–16 — In Winterthur. 42 weeks per year.
- Upper Gymnasium (*Oberes Gymnasium*). 41 weeks per year. — I, 16–17 / II, 17–18 / III, 18–18½ — In Winterthur. 42 weeks per year.
- Industry school (*Industrieschule.*) 41 weeks per year.
  - Technical Division (*Technische Abteilung*). — 3½–4½ years' course.
  - Commercial Division (*Handelsschule*). — 4 „ „
- 40 weeks per year.
  - Teachers' Seminary (*Lehrerinnenseminar*). — 4 „ „
  - Commercial classes (*Handelsklassen*). — 2 „ „
- 40 „ „
  - Continuation classes (*Fortbildungsklassen*). — 3 „ „
  - Foreigners' classes (*Fremdenklassen*). — 1 semester.
  - Course for Kindergartners (Bildungskurs für Kindergärtnerinnen). — 1 year's course.
- 40 „ „
  - Course for teachers of domestic economy (Bildungskurs für Haushaltungslehrerinnen).

Besides the above, there are private and public establishments for the professional education of teachers (*Lehrerbildungsanstalten*), a Technicum (*Technikum*) or Technical College, with the following branches:—

Technicum, with schools for—
- Architecture and Civil Engineering (*Bautechnik*).
- Industrial Electricity (*Electrotechnik*).
- Chemists (*Chemie*).
- Art Industries (*Kunstgewerbe*).
- Surveyors (*Geometer*).
- Commerce (*Handel*).
- Mechanical Engineering (*Maschinen-Technik*).
- Fine mechanical work (*Feinmechanik*).

Then there is an Agricultural school (*Landwirtschaftliche Schule*); an Industrial school (*Gewerbeschule*), with Preparatory classes (*Vorbereitungsklassen*)—two years; the Industrial Continuation school (*Gewerbliche Fortbildungsschule*), with its Tradesman school (*Handwerkerschule*); the Art Industrial school (*Kunstgewerbeschule*; the workshop for the instruction of wood-workers (*Lehrwerkstätte für Holzarbeiter*).

Besides the above, there are special schools, schools for defectives, blind, deaf and dumb, orphans, correctional schools. In the Interim Report, under the chapter treating of "The Coördination of Education," an outline was given shewing the general features of the Zurich Educational Scheme. (See Chap. LIV., p. 469.)

4. *Educational Organisation in the Canton of Berne.*—The following will give an idea of the system in Berne.

Infant Schools and Kindergarten (*Kleinkinderschulen und Kindergärten*).—These are not State schools.

Primary School (*Primarschule.*)

I 6–7	800 hours yearly at least	I	900 hours.
II 7–8		II	
III 8–9		III	1,100 „
IV 9–10	900 „ „	IV	1,100 „
V 10–11		V	
VI 11–12		VI	
VII 12–13	900 „ „	VII	1,100 „
VIII 13–14		VIII	900 „
IX 14–15			

There are two possibilities, one a 9-year course, with a total of 7,800 hours, and an 8-year course, with a total of 8,200 hours.

Manual Instruction exists for both boys and girls. Secondary

Secondary Schools are divided into Realschools and Progymnasia (*Realschulen* and *Progymnasien*). There are also continuation schools (*Fortbildungsschulen*).

Middle Schools.—The middle schools comprise several classes. The following table will give some idea of their organisation.

School.	Entrance age.	Course.	Weeks in year.
	Years.	Years.	
Progymnasium, Thun	10	5	41
Do Berne	10	4	41
Do (German) Bill	10	5	42
Do (French), Bill	10	3	42
Do „ Delémont	10	5	41
Do „ Neuveville ...	9	5	43
Gymnasium *Realabteilung*, Berne	14	4	42
Do *Handelsschule*, Berne	14	4	42
Do *Literarische Abteilung*, Berne ...	14	4½	42
Do Burgdorf	10	8½	41
Kantonschule, Pruntrut	10	8½	40

Besides these there are girls' schools (Mädchenschule), schools for the training of teachers (*Lehrerbildunganstalten*). The list hereunder will give some idea of the courses therein:—

Seminary.	Entrance age.	Course.	Weeks in year.
	Years.	Years.	
Mädchenschule, Bern	15	3	42
Seminar, Münchenbuchsee	15	3½	41
Do Hindelbank	16	3	42
Do Delémont	15	3	42
Do Pruntrut	15	4	41
Do Muristalden-Bern	15	4	41

In addition to the above, there are a number of technical schools, including schools of horology, schools for agriculture, dairying, domestic economy, music, etc., etc.

There are also special schools, as for the infirm, orphans, etc.

5. *Educational Organisations in other Swiss Cantons.*—The following synopsis will perhaps sufficiently reveal the divergences between the different Cantons of Switzerland.

Educational Systems of the Swiss Cantons.

Canton.	Infant Schools, 1900.	Obligation of School Attendance.	Continuous Attendance throughout day.	Complementary School.	Secondary School.	Middle Schools.	
						Lower.	Higher.
Zürich (Zurich)	94	6–16	6–12	12–15	12–15	12–15	16–18½
Bern (Berne)	70	6–15,14	6–14,15	...	10–12,16	10–14,15	14–18,18½
Luzern (Lucerne)	4	6,7–16	7–14	14–16	12–14	12–14	14–18
Uri (Uri)	1	7–15	7–13	14–15	12,13–14,16	13–16	16–19
Schwyz (Schwytz)	2	7–14	7–14	15–16	15–17,18	...	...
Unterwalden Ob.d. Wald. (Nidwald)	2	7–15	7–13	13–15	13–15	13–15	13–19
„ Nid.d. „ (Obwald)	2	7–15	7–13	14–15	12,13–14,15	...	...
Glarus (Glaris)	17	6–15	6–13	13–16	12–15	12–14	...
Zug (Zoug)	4	6–15	6–12	13–15	13–15	12–14	14–18
Freiburg (Fribourg)	10	7–16,15	7–16,15	14–16	14–16	11,12–14	14–18
Solothurn (Soleure)	9	7–15,14	7–14,15	15–18	12,13–14,17	12–?	?–19
Baselstadt (Bâle-Ville)	58	6–14	6–14	(17–20)	10–15	10–14	14–18
Baselland (Bâle-Campagne) ...	18	6–15	6–12	12–15 (17–18)	12–15	...	...
Schaffhausen (Schaffhouse)	33	6–14,15	6–14,15	14–18	11–15	13–?	? 18½
Appenzell A-Ph. (Appenzell Rh-Ext.)	18	6–15	6–13	13–15	12–16	...	...
„ I-Rh. („ Ph-Int.)	1	6–14	6–12	12–14	12–14	...	...
St. Gallen (St. Gall)	38	6–15	6–13	13–15	12–18	12–14	14–19
Graubünden (Grisons)	12	7–15	7–15	...	12–15	12–15	15–19
Aargau (Argovie)	14	7–15	7–15	...	11–15	...	15–18½
Thurgau (Thurgovie)	18	6–15	6–12	12–15	12–16	12–?	–18½
Tessin (Ticino)	44	6–14	6–14	10–	10–?	19–14	14–18
Waadt (Vaud)	149	6,7–16	6–16	14–16	12–16,18	10–16	16–18
Wallis (Valais)	4	7–15	7–15	15–20	13–19	12–?	–18
Neuenburg (Neuchatel)	77	7–14,15	7–13	13–15	13–18	10–15	15–18
Genf. Genève)	68	6–15	6–12	12–14	.....	11–14	14–18

Infant schools and Kindergartens in every Canton; legally organised only in Baselstadt, Aargau, Tessin, Wallis, Neuenburg, Genf. (in 1897).

To go on to the High School, University, or Polytechnicum of Zurich, or any of the Universities, it is necessary to have the certificat de maturité, Maturität-Zeugnis.

It is of course quite impossible to reveal the details of the organization in this form, and hence it does not exactly represent the facts. To sum up the whole matter it may be said that under the Swiss system the primary forms of instruction are obligatory from 6 or 7 years of age to 14 to 16 years of age. In many of the Cantons attendance at evening continuation schools is also compulsory.

The further illustration of the Swiss system may be undertaken by giving programmes of the different schools. In this chapter reference will be made to secondary or middle schools, gymnasia, etc. The organisation in detail may also serve to illustrate Swiss method. The scheme of the Cantonal College of Vaud is first given.

6. *The Cantonal College at Lausanne.*—The regulation organising the "*Collège cantonal à Lausanne*" bears the date 10th February, 1900[1]. The College has for its object the preparation of pupils for higher classic studies, and is under the supervision of the "*Département de l'Instruction publique et des Cultes,*" which is exercised either directly or through its delegates.

It is located in the capital of the canton (Vaud), and is maintained at the expense of the State.—Art. 1.

There are six classes in the Cantonal College, each being one-year duration. Art 2. Every class when it has more than thirty-five pupils is divided.—Art. 3.

The principal subjects of study are:—1. French; 2. Latin; 3. Greek; 4. German; 5. History; 6. Geography; 7. Mathematics (that is, arithmetic, book-keeping, etc., geometry, algebra); 8. Writing; 9. Civic instruction; 10. Introduction to the Natural Sciences; 11. Singing; 12. Drawing; 13. Gymnastics.

The religious instruction is optional, and is not to be taken into account either in regard to promotion or the formation of averages, and parents who desire that their children shall not participate therein have simply to inform the Director.

Where, however, pupils are not specially permitted to absent themselves from the religious instruction, they are required to follow it regularly, as in the other branches of instruction.—Art. 4.

The studies are divided into two groups, viz., the essential and secondary (*les branches "essentielles" et "secondaires"*), the former comprising the languages mentioned, and mathematics and history.—Art. 5.

At the head of the College is a Director ("*Directeur*"), responsible for the general direction, and for the supervision of the teaching.—Art. 6. In the three higher classes each master has his special subject; in the three lower classes a master is assigned a class and gives most of the lessons therein.—Art. 7.

The teaching staff is divided into masters, class-masters, and special masters.—Art. 8. The work is distributed as follows:—

French	... 3 higher classes,	1 master.	—Art. 9.
Latin	... 3 „	1 „	„ 10.
Greek	... 4 „	1 „	„ 11.
German	... 5 „	1 „	„ 12.
Algebra, Geometry	... 2 „ and classes of "*Gymnase classique.*"	1 „	„ 13.
History, Geography	... 3 higher classes,	1 „	„ 14.
Arithmetic, Accountancy...	... 5 lower „	1 „	„ 15.
Natural Science	... 1 highest class and "*Gymnase classique.*"	1 „	„ 16.
French, Latin, History, Geography ...	... 3 lower classes,	1 master each class.	—Art. 17.

NOTE.—*In this case the Master moves along with his pupils during the three years, so that he passes from class to class.*

Sacred History and History of the Church		1 special master.	—Art. 18.
Drawing	... 6 classes,	1 „	„ 19.
Singing	... 6 „	1 „	„ 20.
Writing	... 3 lower classes,	1 „	„ 21.
Gymnastic Swimming	... All classes and three lower, respectively.	1 „	„ 22.

The salaries are determined by the State Council in all cases.—Art. 23.

7. *Appointment of Director and Masters, Lausanne Cantonal College.*—The *Director* is appointed by the State Council for four years.—Art. 24. Every *Master* must possess the requisite qualifications prescribed by law (19th February, 1892, Arts. 72, 109).—Art 25. Vacancies are announced in an official gazette ("*La Feuille des Avis officiels*"), in which the obligations and emoluments, etc., are publicly stated; the applicants apply within the month following; and, if deemed necessary the Department of Public Instruction may examine applicants to determine their pædagogic efficiency.—Art. 26. (See also Law, 19th February, 1892, Art. 75.) In such a case a Commission ("*Jury*") of five members is charged with the duty of examining, the president being indicated by the Department.—Art. 27. The examinations consist of practical exercises, and, by Art. 76 of the Law, must be public.—Art. 28.

The "*jury*" decides upon the subject of the lessons in the secondary programme to be given by the applicants, fixes the time for preparation, and the duration of the lessons. It places also such books and material at their disposal as it deems necessary or serviceable.—Art. 29. (Regulations of 1897. Art. 2.)

The Commission makes a detailed report, setting forth the qualifications of each applicant and the result of his examination, setting forth the order in which they class the applicants (see Regulations, 1897, Art. 53.) and the State Council appoints on the bases of this report.—Art. 30.

Should no applicant be deemed sufficiently qualified, temporary provision is made for the teaching, and a further examination is held.—Art. 31.

The *Special Masters* are appointed after a series of tests concerning their special subjects.—Art. 33. (Loi, Art. 74.)

Persons favourably known by their work or teaching, and possessing the necessary qualifications (Loi, Art. 72) may be appointed as master or master of class.—Art. 32. 8.

[1] Translated from the Règlement pour le Collège Cantonal, Lausanne, James Regamey, 1900.

8. *Pupils in the Lausanne Cantonal College.*—The pupils of the Cantonal College are divided into regular pupils (*élèves réguliers*), who follow the whole course; external pupils (*externes*) who follow only certain courses; and special pupils (*auditeurs*).—Art. 34. The régime necessarily differs somewhat in each case.

9. *Regular Pupils.*—Pupils of the two higher classes are admitted to the various establishments for public instruction, such as the cantonal library, the school of drawing, the "*salle d'armes*," the riding school, conformably to the regulations of these various establishments.—Art. 35.

Regular pupils may be exempted from the religious teaching (Art. 36), and the Director may relieve them, at the request of the parents, from drawing, singing, and gymnastic lessons. A medical certificate, however, may be required.—Art. 37.

To be admitted into Class VI of the Cantonal College, it is necessary to be 10 years of age on the 31st December of the year then current, and to give evidence, through an entrance examination, that the general state of knowledge and intellectual development possessed is such as must be acquired in the first grade of primary instruction.

Pupils present to the Director their certificates of birth and vaccination.—Art. 38.

Entrance into the other classes is at 11 years for Class V, 12 years for Class IV, and so on.—Art. 39.

These conditions as to age may not be set aside.—Art. 40.

Pupils may be admitted to any class without having passed through the earlier classes, provided they fulfil the age conditions and pass an entrance examination, which is held always in July; and admission may take place at any time not later than the spring vacation.—Art. 41.

Regular pupils pay an annual fee of 70 francs (£2 16s.) in the three higher classes, and of 60 francs (£2 8s.) in the three lower classes; this is paid in three instalments, viz., one-half on 1st October, one-fourth on 1st December, and the balance on the 1st March.[1]—Art. 42.

The receipt of school-fees is seen to by the Director's secretary, who receives at least 2 per cent. of the receipts.—Art. 43.

When two or more brothers are regular pupils of the Cantonal College, of the "*Gymnase classique*," or of the Industrial and Commercial Schools, the eldest pays full fees, the others half fees; but they pay the whole of these half fees at the beginning of the term.—Art. 44. The fees are due at the date of commencement, and the obligation of payment is unaffected by any cause of discontinuance of study.—Art. 45.

The whole or part of the school fees may be remitted in the case of deserving pupils whose parents are in straitened circumstances. This remission is accorded on the advice of the Department of Public Instruction.—Art. 46.

Requests for remission of fees must be made at the commencement of the school year by the parents or guardian to the Director of the College, who transmits the application, endorsed with his advice, to the Instruction Department, and with such information as he is able to furnish regarding the pupil concerned.—Art. 47. (See also Règlement, 1897.—Art. 42). The remission is limited to one year, when the whole matter is again reviewed.—Art. 48. (Also Règlement, 1897.—Art. 44).

At the end of any examination, the conditions of which are fixed by regulation, the State may award bursaries to pupils whose parents have made application, and have given satisfactory evidence of their limited means. The bursaries, and the conditions under which they are held, are determined by special regulation.—Art. 49.

10. *External Pupils, Lausanne Cantonal College.*—External pupils (*externes*[2]) are those who attend only part of the entire course, Art. 50; and are admitted only to the two higher classes in the College. Art. 51. They submit to the same studies and discipline as the regular pupils, so far as the work they do is concerned. In order to be so admitted they must fulfil the same conditions of age, general knowledge, and intellectual competency as regular pupils, and must shew that they can profitably follow the course, and do so without inconvenience to the class.—Art. 52.

The masters in conference have the right of fixing the restricted course which must be followed by "*externes*" (external pupils), who have not discharged their obligation as regards attendance at the primary school. (Reg. 1897, Art. 71.) The *externes* are required to take the Latin or Greek courses.—Art. 52. They pay fees as follows:—20 francs (16s.) for a course of 2 to 3 hours per week; 30 francs (24s.) for a course of more than 3 hours. In taking a number of courses the total sum payable shall not exceed 100 francs (£4); and the whole of the fee is payable at the time of admission. If, however, this take place after 1st February, the total may not exceed 50 francs (£2).—See Art. 54.

11. *Special Pupils* ("*Auditeurs*").—Pupils who so desire may attend as special pupils (*auditeurs*) without submitting to the entrance examination, but only for the three months before the end of the school year. If they then wish to be admitted to the next higher class, they must submit to the examination at the end of the school year.—Art. 55. They pay a fee of 25 francs (£1).—Art. 56. They attend all the lessons of their class, and are subject to the same conditions of age and discipline as the regular pupils.—Art. 57.

12. *Pupils from Communal Colleges, Vaud.*—Special provisions are made for pupils from the Communal Colleges.

In all cases where there is complete agreement year by year between the classes in the Communal Colleges and the Cantonal College. The pupils of the former are legally entitled to enter the latter at the commencement of the school year, and to enjoy the benefit of all examinations, promotions, etc. (Loi., Art. 102; Reg. 1897, Art. 16). This agreement may also be established during a period of two or more years, during which pupils may be prepared to enter a definite class of the Cantonal College.—Art. 59.[3]

Up to the end of the school year the Cantonal College gratuitously receives as "*auditeurs*" the pupils of those Cantonal Colleges the school year of which terminates in April.—Art. 60. (Also Reg. 1897, Art. 20).

Certificates

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[1] There are certain modifications for those who attend part of the year that need not be detailed.

[2] *Externes* often mean day scholars, as distinguished from boarders; not so here.

[3] There are certain limitations, which need not be specially noticed. (Loi, Art. 102; Reglement de 1897, Art. 17.

Certificates are given by the Directors of the Communal Colleges to the pupils who propose to continue their studies in the Cantonal College. These certificates shew the course of studies passed through; they are *visé* by the Department, and then transmitted to the Director of the Cantonal College.—Art. 61.

13. *Examination and Promotion, Cantonal College of Lausanne.*—Under the control of the Director, the work of every pupil is estimated by the masters (Art. 62), who keep a register of all marks given. The record may be demanded by the Director.—Art. 63. The mean of the marks is entered in a special register three times a year, each mean being based upon at least two marks.—Art. 64. (Reg. 1897, Art. 89.)

In the annual mean the conduct marks are also taken into account.—Art. 65. (Reg. 1897, Art. 88.) The marks are multiplied by coefficients determined by the Department.—Art. 66. (Reg. 1897, Art. 87). And the promotion is based solely upon the year's work.—Art. 67.

Four times a year, a bulletin is addressed to the parents, notifying them as to the marks, conduct, and number of absences of the pupils.—Art. 68. The fourth bulletin contains the mean of the marks of the three quarters.—Art. 69.

In the first class, the bulletin contains the marks furnished by the examinations. These count as a fourth in the question of promotion, and are taken together with the preceding marks.—Art. 70.

Recapitulations of work are as follows:—

French.—Grammar and rhetoric. The recapitulation is made as soon as the end of an important chapter is reached, or the end of a series of related chapters.

Latin.—The same. In the three lower classes, the whole of the work translated is recapitulated; in the three upper classes, about half of the work.

Greek.—Grammar recapitulated as for the French. Recapitulation of the whole of the work translated for Classes III and IV, and about half of the work of the two higher classes.

German.—Recapitulation of grammar as for French. The reading lessons repeated throughout or in part.

Mathematics, including arithmetic.—A certain amount of written work, covering the work done, is to be performed in class during the currency of the year.

History and Geography.—The whole of the work done is carefully recapitulated during the course of the year, and the pupils may be called upon to do written work.—Art. 71.

The Director, as far as possible, takes part in the work of recapitulation (Art. 72), the masters giving such information as to the recapitulation work done during the currency of the year as may seem desirable.—Art. 73. The masters may, if they think fit, assign a higher than ordinary value to the marks for recapitulation.—Art. 74.

The *examinations* of the first class take place at the end of the school-year, and bear only upon the essential branches, the mean obtained in the other branches during the year serving to complete the fourth bulletin.—Art. 75.

The examinations in the various subjects comprise the following:—

French.—A dictation, a composition on a subject drawn from the year's reading, a recitation, questions on rhetoric, the reading of several lines of a text. Beyond this, questions referring to the text itself, to grammar, analysis, etc., are put to the pupils, conformably to the matter treated in the programme of lessons.

Latin.—A written essay, a written translation, an oral translation and explanation of a text not previously studied.

Greek.—Same as the Latin, excepting the written essay.

German.—Same as Latin.

Mathematics.—Written and oral examinations.

History.—An oral examination.—Art. 75.

All written parts of the examination are sent by the master to the Director (Art. 76), and the examinations are public.—Art. 77. They are organised by the Director, and the values are estimated by Commissions, consisting of three, viz, the master teaching the subject of examination and two experts therein, of which one at least must be drawn from the teaching-staff of the Classic Gymnasium. The Director himself may also take part in the deliberations of the Commissions.—Art. 78. These experts are appointed by the Department of Public Instruction, on presentation by the Director of the College.—Art. 79.

The scheme of estimation is as follows, viz.:—Very good, good, fair, passable, indifferent, bad, very bad (très bien, bien, assez bien, passable, médiocre, mal, très mal)—10, 9–8, 7, 6, 5–4, 3–2, 1–0.—Art. 81.

At the conclusion of the examination the Commission sends to the Director a list of the marks obtained, and any necessary observations thereon (Art. 82); and it is on the mean of the marks of the four bulletins (expressing the general mean) that promotion is determined.—Art. 83.

Promotion follows when the pupil obtains 60 per cent. of the total marks for the subjects he has taken; provided, also, that he has obtained 60 per cent. for the essential branches.—Art. 84 (Reg. 1897, Art. 90). All questions relating to promotions are determined by the conference of masters, and referred to the Department.—Art. 86.

In the first class, any pupil who has not obtained a general mean of 50 per cent. during the year is not allowed to undergo examination.—Art. 86. An "*externe*" can go on in any class, unless he has obtained in the class below an average of 60 per cent. for the year.—Art. 87. The "*auditeurs*" undergo an examination in July, which alone decides promotion.—Art. 88.

The "*auditeur*," when he is denied promotion, may remain as a regular pupil in the class where he was provisionally admitted, if he has obtained 40 per cent. of the maximum marks.—Art. 89. The "*auditeur*," however, who does not fulfil this condition, may be assigned a class even lower than that which he has attended.—Art. 90.

Subject to the production of a medical certificate to that effect, a pupil, or an "*auditeur*" in the first class, prevented by illness from attending the July examinations, may submit to them on the opening in September.—Art. 91.

In

In all classes excepting the first, when the pupil is prevented by illness from attending all or part of the lessons of the third quarter (*trimestre*), he may be promoted on the basis of his marks; but such cases shall be individually dealt with at the conference of teachers. If promotion is not accorded, the pupil is admitted to an examination at the opening of the classes to decide the question.—Art. 92. The promotion of pupils is announced by the Director.—Art. 93.

Regular pupils who leave from the second class of the Cantonal College have the right to enter the third class of the Normal School if they are 16 years of age. In every case pupils who wish to exercise this right must inform the Director, at the commencement of their last year of study in the second class of the Cantonal College. The Director informs the Department.—Art. 94.

14. *Secondary Instruction Certificate, Lausanne Cantonal College.*—Pupils who leave from the first class of the Cantonal College, after having satisfied all the conditions of instruction, receive a diploma or certificate of having qualified themselves in the secondary school. (*Certificat d'instruction secondaire.*)—Art. 95.

These certificates are conferred by the Director at a public gathering, and before all the pupils of of the College.—Art. 96.

15. *Details of the Scholastic Year, Lausanne.*—The school-year commences on the second Monday in September, at 2 p.m. (Art. 97), and the lessons and examinations are given in forty weeks.—Art. 98.

Each lesson lasts fifty minutes; but the first morning lesson is only forty minutes from the commencement in September to the spring vacation.—Art. 99.

A recreation of ten minutes is thus allowed between each lesson. During this time they are in the school-grounds, or corridors, etc., under the supervision of the masters.—Art. 99.

The Director submits to the Department a time-table of lessons before the commencement of the school year. In the distribution of the time the interest of the pupils must have the highest regard, and every care must be taken to utilise their talents and time to the best advantage.—Art. 100.

There are no lessons on the afternoons of Wednesdays and Saturdays.—Art. 101.

The vacations are twelve weeks a year, viz., two weeks at New Year, two at spring, eight in summer.—Art. 102.

16. *Duties of the Director, Lausanne.*—The Director is required to supervise the whole course of study, the distribution of the time, etc. He visits every class as often as possible, and assures himself that the various regulations are being adhered to, both by the masters and pupils. He has the absolute right of intervention in all cases of necessity, in matters of discipline, etc.—Art. 103.

On the other hand, subject to maintaining unity of teaching in method, discipline, etc., the Director is expected to *accord to the teaching staff every possible latitude consistent with the well-being of the College*[1].—Art. 104. In his relations with the teachers the Director is scrupulously careful to conserve harmony, and to do nothing that would prejudice the respect owed to each master by his pupils. He is required to *most carefully abstain from making any remarks to the master in the presence of his pupils, calculated to lower the teacher's respect or to prejudice his authority*[2].—Art. 105.

The Director concerns himself with all matters affecting the good of the College, and may make expenditures without reference to the Department, limited, however, to 300 francs (£12).—Art. 106.

The specific duties of the Director are as follows:—

(a) To inscribe the name of every pupil in a register.
(b) To keep a register of the absence of pupils.
(c) To register the absence of masters, and the reason of absence.
(d) To preside at the conferences of masters.
(e) To despatch bulletins (notices) to the parents of the pupils.
(f) To organise and direct the school courses, with the assistance of the teaching staff.
(g) To supervise the material, and the buildings.
(h) To preserve the archives of the college.
(i) To make an annual report as to the teaching staff, the pupils, and the general progress of the College.
(j) To draft time-tables for lessons and examinations.—Art. 107.

The Director has a *Secretary*, appointed by the Council of State, which also fixes the salary to be paid.—Art. 108.

The Director may not be absent from duty for more than six days without notification to the Department. When necessary to be absent for a longer time, his place must be taken, either by a member of the teaching staff, or other person agreed upon by the Department. When the absence is caused by illness or other cause not subject to the will of the Director, the payment of his *locum tenens* is to be made by the State, but otherwise by the Director himself.—Art. 109.

All complaints of parents or guardians against the Director must be made to the Department, which decides in regard thereto, subject, however, to appeal by the Council of State.—Art. 110. The Council of State may suspend or dismiss the Director for incapacity, immorality, or insubordination, but he must be heard in his defence at a proper inquiry.—Art. 111. (Loi, Art. 96). When he no longer is able to discharge his duties satisfactorily, the Council of State may terminate his office after proper inquiry, and may allot him an indemnity, which takes into account the length of his service, his age, and salary.—Art. 112.

17. *Conferences in the Lausanne Cantonal College.*—In accordance with the custom obtaining practically over the whole of Europe, periodical conferences are held by the teaching staff. They are organised as described hereunder.

The conference consists of the Director and masters together, and has for its aim a co-operation with the Director in all that makes for the good progress of the establishment. Its meetings are convened and presided over by the Director.—Art. 113. The

[1] The facility with which this may be done depends upon the thoroughness of the professional qualifications of the teacher. The immense advantage of the free method will be obvious to every student of educational methods.

[2] This matter is of greater importance than is sometimes recognised.

The specific duties of the Conference are:—

(a) It studies all questions affecting the College, its teaching, its programmes, its methods, manuals, etc.
(b) It determines the conduct-marks of the pupils for every bulletin.
(c) It recommends the Director to accord or decline promotion from one class to another in the case of each pupil.
(d) It examines all questions of discipline submitted by the Director.—Art. 114.

The annual programme of the courses is established at a Conference of the Masters of the College and submitted to the Director for approval.—Art. 115.

The Conference must hold at least six meetings per school-year. The Director co-operates whenever he thinks it necessary. Upon the request of one or more members of the teaching-staff he must convene a meeting within fifteen days. The masters must assist at the *séances* of the Conference.—Art. 116.

Minutes of the sittings and a special register are kept. The Council of State appoints the vice-president. The person so appointed fulfils the duties of secretary.—Art. 117.

18. *Duties of Teachers in the Lausanne Cantonal College.*—The duties of the masters may be described as scholastic and domestic, the latter being those concerned with college routine outside the actual teaching.

It is required that the affairs of the College be so arranged that the domestic duties (*devoirs domestiques*) be reduced to embrace only what is absolutely necessary, and in the two lower classes they must not exceed ten hours a week, nor in the four higher more than fifteen hours a week. The compositions, exercises, translations, etc., are for the most part done in class.—Art. 118.

Neither home-work ("*pensum*"), *nor special tasks* ("*travail extraordinaire*") *may be inflicted on pupils by way of punishment.*—The duty of doing an exercise over again, however, in case of bad writing or negligence, is not, however, considered a *pensum*. Extra tasks may be imposed upon pupils punished by retention or by temporary exclusion, etc.—Art. 119.

Masters must rigorously abstain from doing or saying anything calculated to wound the pupils, and must make use of no means of repressive discipline not authorised under the present regulations.—Art. 120. And a master seeks to obtain obedience and respect by every means within his power before having recourse to the authority of the Director.—Art. 121.

No master shall be absent from a lesson without having previously obtained the Director's authority. Absences of masters are entered in a special register, which is *viséd* once a year by the Department.—Art. 122. The Director may allow a master three days' leave at most; longer leave must be obtained from the Department, on the Director's advice.—Art. 123.

The provisions relating to the cessation of capacity of Director, and of conformity to the regulations aiming at the well-being of the College, etc, in Arts. 112, 113 apply equally to masters.—Art. 124.

When a master is temporarily prevented from discharging his duties, the Council of State may temporarily provide for the teaching at the cost of the master; but should the absence be due to illness or other cause outside the control of the master; the State will bear the cost. Should, however, the period of disability go beyond six months, the provisions of a special section of the law may be applied (Loi, Art. 97).—Art. 125. In this case an indemnity may be accorded, the amount of which is fixed by the Council of State, having regard to the length of service, age, and salary of the master. He has, of course, the right of appeal to the Council of State.—Art. 126.

All complaints against masters, made by parents or guardians, must be first addressed to the Director. If the matter is not thereby concluded, then the complaint must be submitted to the Department, which decides the matter, subject, however, to appeal to the State Council.—Art. 127.

19. *Discipline in the Cantonal College of Lausanne.*—The following are the disciplinary provisions in the Cantonal College at Lausanne:—

Pupils are required to attend regularly during the entire year, and attend all the lessons of their class—Art. 128; and the masters take exact account of their absences, under a formula remitted to the Director.—Art. 129.

Leave to a pupil for not more than the fortnight (15 *jours*[1]), may be given by the Director, and for a longer period by the Department.—Art. 131.

The punishment of *detention* shall be inflicted upon every pupil who, without excuse or sufficient reason, is absent from lessons. If he repeat his offence (*s'il y a récidive*), temporary expulsion may be pronounced.—Art 132.

Pupils are not permitted to (*a*) take part in meetings of student societies; (*b*) make part of a society; (*c*) frequent public establishments, unless accompanied by parents, guardians, or others responsible.—Art. 133.

The punishments which may be incurred by pupils are the following, viz.:—

(1) Bad marks.
(2) Placing aside.
(3) Detention.
(4) Exclusion from a lesson.
(5) Report to the Director, who may admonish privately or before the class.
(6) Report to parents.
(7) Detention for intervals for as much as a week.[2]
(8) Citation before a Masters' Conference.
(9) Temporary exclusion or suspension.
(10) Definitive expulsion from College.

See Art. 134. Any other disciplinary rules may be made the subject of further regulations—Art. 135.

Pupils of the four lower classes who do not know their lessons are required to make good their failure by the next lesson, failing which detention may be inflicted. In each class a register is kept of those who are behindhand in their lessons.—Art. 136.

Exclusion from a lesson is pronounced by the master, who acquaints the Director therewith immediately after the lesson. This punishment is, for obvious reasons, inflicted as rarely as possible.—Art. 137.

The

[1] Really 14 days; the expression means that.
[2] (*Huit jours.*) This is awarded by the Director, who reports to the parents.

The Director may exclude a pupil for a week, and the Conference of Masters, for three months. Temporary and permanent exclusion are pronounced by the Department at the request of the Masters' Conference.—Art. 163.

Once a year, the pupils of the Cantonal College unite with those of the Industrial School and the Commercial School, in a "*fête des études*," the time and nature of which are fixed by the Department.—Art. 139.

20. *Caretaking of the Cantonal College, Lausanne.*—Every school, at least of any size, in Europe, has its caretaker or *concierge*. In Vaud, he is appointed by the State Council, and is under the immediate orders of the Director.—Art. 140. (This is the universal custom.)

The *concierge* attends to the lighting and heating of the college rooms, the cabinet of the Director, the rooms of the masters; he keeps the place clean throughout, not only the rooms, corridors, etc., but also all other parts of the establishment.—Art. 141. He rings the bell at the proper hours,—Art. 142; he supervises the pupils during recreation, preventing their taking part in dangerous games and exercises. Art 143.

He sees generally, to the carrying out of special regulations of discipline at the college, and notifies the Director when pupils contravene the rules.—Art. 144. He notifies also as to any injury done to the building or furniture[1] of the college.—Art. 145.

The *concierge* sees to the preservation of all objects belonging to the establishment, and is responsible when the college is closed.—Art. 146. In matters concerning the college, he fulfils the functions of usher for the Director, and for the Conference of Masters.—Art. 146. He is required to discharge his several duties personally, or by a temporary substitute agreed to by the Director.

21. *General concerning the Vaud regulations.*—The above organization was determined by regulations given under the seal of the Council of State of Lausanne on 10th February, 1900,[2] and it affords a general indication of the method of Switzerland, and of the explicit character of the declaration of duty of the pupils and of the college functionaries. In reading the regulations it should be remembered that each teacher, having been professionally educated for his office, appreciates their significance, not only as regards the letter but also their spirit. The law itself is equally explicit.

22. *Curriculum in Secondary Schools at Lausanne.*—The *Plan d'études general* for the secondary schools of the Canton of Vaud in force at the time of the Commissioners' visit was that bearing date 1899. Some idea of it has been given in the Interim Report, chap. V, sect, 9, 10, pp. 48–50. It is unnecessary to add thereto.

An idea of the curriculum of the Geneva College is given on pp. 34, 35 of the Interim Report.

One of the finest secondary schools for young women in Lausanne is the Ecole Vinet[3]—a higher school and gymnasium. Its programme is as follows:—

Programme of Ecole Vinet, Lausanne.

Subject.	Higher School.							Gymnasium.	
	Class VI. Age, 8–9.	Class VI. Age, 10.	Class V. Age, 11.	Class IV. Age, 12.	Class III. Age, 13.	Class II. Age, 14.	Class I. Age, 15.	Class II. Age, 16.	Class I. Age, 17.
Religion	...	2	1	1	1	1	2	2	2
French	8	8	7	7	6–7	6	5	6	5
German	2	2	2	3	3	3	3	2	2
English	...	...	...	...	2	2	2	2	2
Geography	2	2	2	2	2	2	2	...	...
History	...	2	2	2	2–3	2	2	4	2
Arithmetic	4	3	3	2	2	2	3[5]	...	1
Object lessons ...	...	2	2	2	1	...	...	...	...
Botany	...	...	...	...	...	1	...	...	...
Physiology	...	...	...	...	...	...	2	...	...
Mathematics	...	...	...	...	...	...	...	2	1
Physics	...	...	...	...	...	...	...	2	2
Chemistry	...	...	...	...	...[4]	...	...	1	1
Cosmography ...	...	...	...	...	...	...	...	1	1
Drawing	...	2	2	2	2	2–2½	2–2½	...	...
Writing	4	2	2	2	1	...	...	...	...
Singing	4	4	4	1	1	1	1	...	...
Gymnastics	5[4]	5[4]	5[4]	2	2	2	...	...	...
Needlework, etc. ...	2	2	2	2	2	2	2	...	...
Hygiene	...	...	...	...	...	...	...	...	1

[1] One is struck with the very fine appearance of the newer buildings in Europe, and with the scrupulous care with which they are kept. Indecent drawing and writing, scratching and hacking the desks, seats, and woodwork generally, *are conspicuous by their absence.*

[2] "Règlement pour le collège cantonal." Lausanne Imprimerie, James Regamey, 1900. These regulations are reproduced in "Jahrbuch des Unterrichtswesens in der Schweiz, 1900, 14 ter Jahrg. Beilage I, pp. 272–282, Zurich, 1902.

[3] Ecole Vinet, gymnase et école supérieure de jeunes filles à Lausanne, Année scolaire, 1902–3. Imprimerie Georges Bridel et Cie. 1902.

[4] Note.—Five times a week, not five hours.

[5] Authentic, two hours; and book-keeping, one hour.

Besides

Besides the courses above enumerated there are free courses, and also a higher division. They are as follows:—

Subjects.	*Hours per week.*
i. Pædagogy	2
ii. Swiss History and Civic Instruction	2
iii. History of Foreign Literature	2
iv. Greek and Latin Literature	1–2
v. Mythology	1
vi. Logic	1
vii. Nursing—the sick-room, etc.; 10 lessons	2
viii. Practical notions concerning business; 6 lessons.	
ix. Practical aspects of Social Duty; 6 lessons.	
x. Struggle against tuberculosis; 6 lessons.	
xi. Madame de Charrière and her friends; 5 lessons.	

Special subjects.

French Stenography, 2 half-hours per week; practical course of Cookery, 25 lessons.

Practical courses in teaching.

Methodology, 1 hour; Mother tongue, 2 hours; Arithmetic, 2 hours; Geography and Object lessons, 1 hour; Writing, 1 hour.

Besides the above, there are further special courses in French, English, Latin, and Drawing.

An illustration of the splendid building is given in Chapter L on School Equipment in the Interim Report. (See page 448.)

23. *Secondary Schools in the Canton of Neuchâtel.*—In the Canton of Neuchâtel (Neuenburg) there are secondary schools (*écoles secondaires*), a classic school (*collège latin*), and higher school for young ladies (*école supérieure de jeunes filles*).

In the "*Collège secondaire des garçons*," and the *Ecole des secondaire des jeunes filles*, the programmes for 1902–3 were as follows:—

Neuchâtel Secondary Schools.

Subjects.	Secondary College for Boys.[1]			Totals.	Secondary School for Girls.[2]			Totals.
	Class III. Age, 12–13.	Class II. Age, 13–14.	Class I. Age, 14–15.		Class III. Age, 12–13.	Class II. Age, 13–14	Class I. Age, 14–15.	
French...	6	6	6	18	6	6	8	20
German	4	4	4	12	3	3	4	10
Geography	2	2	2	6	2	2	2	6
History	2	2	2	6	2	2	2	6
Civic Instruction ...	1	1	...	...	...	...	...	...
Mathematics	6	6	5	17	3	3	3	9
Book-keeping	1	1	...	2	...	...	...	...
Natural Science ..	2	...	...	2	1	2	3	6
Physics	...	2	1	3	...	...	...	...
Chemistry	...	...	2	2	...	...	...	...
Natural History ...	...	1	2	3	...	...	...	...
Artistic Drawing ...	2	2	2	6	2	2	2	6
Mathematical Drawing	...	2	2	4	...	...	...	...
Singing	1	...	...	1	2	2	2	6
Gymnastics	2	2	2	6	2	2	2	6
Domestic Economy ...	...	...	...	...	...	1	...	1
Writing	...	...	...	...	1	...	...	1
Needlework, etc. ...	...	...	...	...	4	4	2	10
Totals ...	29	31	30	90	28	29	30	87

[1] Collège secondaire des Garçons. Programme d'enseignement, année scolaire, 1902–3. Neuchâtel, Imprimerie nouvelle, 1902.

[2] Nouveau Collège des Terreaux. Neuchâtel, Imprimerie L. A. Borel. 1902.

In

In the Neuchâtel classical college for boys the programme and development are slightly different.

Programme Neuchâtel Classical College.

Subject.	Hours per week.					
	Class V. Age, 10–11.	Class IV. Age, 11–12.	Class III. Age, 12–13.	Class II. Age, 13–14.	Class I. Age, 14–15.	Totals.
Latin	6	6	6	6	6	30
French	6	5	4	4	4	23
Greek	...	...	5	5	5	15
History	2	2	2	2	2	10
Geography	2	2	2	2	2	10
Natural History	...	...	...	2	2	4
Mathematics	3	3	4	4	4	18
German	...	6	4	4	4	18
Writing	2	1	...	...	...	3
Drawing	2	2	2	2	2	10
Singing	1	1	1	...	...	3
Gymnastics	2	2	2	2	2	10
Totals	26	30	32	33	33	154

In addition to the above the English and Italian languages are taught as optional subjects.

Besides these secondary schools there are higher courses. Thus, there is the "*Ecole supérieure des jeunes filles*," a continuation of the *école secondaire*. The locale is the same (*nouveau* collège des Terreaux).

The age of admission is 16. The course is as follows:—

Programme of the Superior School for Young Ladies, Neuchâtel.

Subjects.	Age, 16-17. Lower.	Age, 17–18. Higher.	Subjects.	Age, 16–17. Lower.	Age, 17–18. Higher.
French	10	3	Geography	2	2
History of French Literature	2	2	Natural History	2	2
History of French Language	...	2	Physics	2	2
German	4	3	Chemistry	...	2
German Literature	...	2	Mathematics	3	3
English	2	2	Hygiene	...	2
English Literature	...	2	History of Art	...	2
Italian	2	2	Artistic Drawing	...	2
Italian Literature	...	2	Painting	...	4
Ancient Literature	1	1	Church History	...	1
Latin	2	2	Common Law	...	1
Elements of Psychology ...	2	...	Gymnastics	...	2
Elements of Philosophy ...	...	2	(Special) Music	2	2
Pædagogy (History of) ...	1	1	Singing	3	3
General and National History	2	2	History of Music	1	1

24. *Secondary Schools of Lucerne.*—The programmes of the secondary schools in Lucerne follow on those of the primary school. In both cases there is a little difference between classes for boys and girls. Both are given hereunder. Entrance into the primary school is at 6 or 7 years of age, and into the secondary school at 12 to 14.

Programmes of Primary and Secondary Schools of Lucerne.[1]

Boys' Schools.

Subjects.	Primary.						Secondary.		
	Class I. Age, 7.	Class II. Age, 8.	Class III. Age, 9.	Class IV. Age, 10.	Class V. Age, 11.	Class VI. Age, 12.	Class I. Age, 13.	Class II. Age, 14.	Class III. Age, 15.
Religion	3	3	3	3	3	3	2[2]	2[2]	2[2]
German	13½	11½	11	9	7	8	6	5	5
French	...	...	...	...	...	...	5	5	4
English (or Italian)[3]	...	...	...	...	...	...	...	...	4
Arithmetic ... }	7	6	6	6	6	6	4	4	3
Geometry ... }							2	1	2
Book-keeping ...	...	...	...	...	...	...	1	1	1
Natural Science ...	...	...	...	...	2	2	2	3	3
History	...	...	...	2	2	2	1½	2	2
Geography	...	...	...	2	2	2	1½	2	1
Caligraphy	...	3	2	2	2	2	1	2	1
Freehand Drawing }	...	...	2	2	2	2	2	2	2
Technical Drawing }							...	2	2
Singing	1½	1½	2	2	2	2	2	1	...
Gymnastics[4]... ...	...	...	2	2	2	2	2	1	1
Totals ...	25	25	28	30	30	31	32	33	33

Girls' Schools.

Subjects.	Primary.						Secondary.			
	Class I. Age, 7.	Class II. Age, 8.	Class III. Age, 9.	Class IV. Age, 10.	Class V. Age, 11.	Class VI. Age, 12.	Class I. Age, 13.	Class II. Age, 14.	Class III. Age, 15.	Class IV. Age, 16
Religion	3	3	3	3	3	3	2[2]	2[2]	2[2]	2[2]
German	12	12	10	8	7	6	5	4	3	3
French	...	...	...	...	...	4	5	5	4	3
English (or Italian)[3]	...	...	...	...	...	...	...	...	3	3
Arithmetic... }	6	6	7	5	5	4	2	2	2	2
Geometry ... }							1	1	...	1
Book-keeping ...	...	...	...	...	...	..	1	1	...	1
Local Information[5]..	...	...	...	2	3	2	...	...	...	...
Natural Science ...	...	...	...	...	1	1	1	2	2	2
History	...	...	..	...	...	...	1½	1½	...	...
Geography ...	...	...	...	...	...	...	1½	1½	2	2
Caligraphy... ...	...	...	2	2	2	2	1	1	1	1
Freehand Drawing }	...	...	...	1	2	2	2	2	2	2
Technical Drawing }							...	...	...	...
Singing	1	1	2	2	2	2	2	2	1	1
Gymnastics[6] ...	...	...	...	2	2	2	2	2	2	2
Needlework, etc. ...	3	4	4	4	3	3	4	4	4	4
Totals ...	25	26	28	29	30	31	30	30	30	30

The recent school buildings in Lucerne are very good. In some cases the primary and secondary schools are housed under the one roof (*e.g.*, Musegg Schulhaus). The Sali Schulhausen, a primary school only, cost £16,000.

The system does not call for special comment, and is, perhaps, sufficiently indicated by the programmes.

25.

[1] From the Jahresbericht über di Primar—und Sekundarschulen der Stadt Luzern. Schuljahr, 1901-2. Luzern, Buchdruckerei Grabenhof, 1902.

[2] Religious instruction is optional in the Secondary School.

[3] Only *one* second language is allowed.

[4] Gymnastics or preliminary military exercises.

[5] Local information (Vaterlandskunde).—This really includes the geography of the canton of Central Switzerland, and the history of the Swiss Confederation, its significance, etc.

[6] In the "Musegg Schulhaus" at Lucerne the room or gymnastics (Turnhalle), which was very well equipped, had a floor.

25. *Programme of the Latin Schools of the Canton of Zug.*—The secondary system of the Canton of Zug is somewhat, though by no means exactly, similar to the German system. The following is the programme:—

Programme of thv Latin Schools of the Canton of Zug.

Subjects.	Lower Gymnasium.		Upper Gymnasium.					Totals.
	Class I. Age 12.	Class II. Age 13.	Class I (III). Age 14.	Class II (IV). Age 15.	Class III (IV). Age 16.	Class IV (VI). Age 17.	Class V (VII). Age 18.	
Religion	2	2	2	2	2	2	2	14
German	4	4	3	3	3	3	3	23
Latin	7	7	7	7	7	7	6	48
Greek	...	...	5	5	6	6	6	28
French	4	4	3	3	3	3	3	23
Italian	...	...	(3)	(3)	(3)	(3)	(3)	15
English	...	...	(3)	(3)	(3)	(3)	(3)	15
Arithmetic and Algebra	3	3	2	2	2	2	1	15
Geometry	...	...	2	2	1	1	2	8
Natural History ...	...	...	2	2	...	...	...	4
Physics and Physical Geography ...	...	...	...	...	3	3	3	9
Chemistry and Laboratory ...	...	...	...	...	2	2	1	5
History	2	2	2	2	2	2	2	14
Geography	2	2	2	2	...	...	...	8
Book-keeping and Commerce ...	1	1	...	...	...	...	...	2
Freehan l Drawing	2	2	2[1]	2[1]	...	...	...	8
Caligraphy	1	1	...	...	...	...	...	2
Singing	1	1	1[1]	1[1]	1[1]	1[1]	1[1]	7
Gymnastics ...	2	2	2	2	2	2	2	12
	31	31	37	37	36	36	32	

The above programme came into force on 1st October, 1897. The details of its development are given hereunder.

26. *Details of the Curriculum in the Latin Schools of Zug.*—The subjects enumerated above are treated as indicated in the following brief synopsis:—

Religion—

Class I. Catechism; doctrine of faith; Church history from the time of Christ to Gregory VII.

II. Catechism; Doctrine of the Law; of the Means of Grace; Church history from Gregory VII to recent times.

III. Divine revelations in the Old and New Testaments; the Church; the Doctrine of God, and of His Work as Creator, Redeemer, Sanctifier; the means of Grace in detail.

IV. Conclusion of the Doctrine of the means of Grace; general ending of the World; Catholic ethics.

V. The ecclesiastical year; selections in the doctrine of Faith and in that of Morals; Church history.

VI. Church history; apologetics.

VII. Doctrine of faith and morals; recent Church history.

German—

Class I. Reading: narratives, descriptions, letters, easy epic poems, explanations, oral repetition of narratives, recitation of poetry; grammar: parts of speech and their inflexions; the pure and extended simple and compound sentences; composition, general; the characteristics of style; an essay and its divisions: reproduction of prose and poetry, letters, business compositions, narratives and descriptions.

II. Reading, longer and more difficult prose and poetry; dictation; grammar: advanced theory of the sentence, repetition of the theory of parts of speech; composition: more advanced than previous class, easy treatises, practice in writing sentences in various styles.

III. Reading: descriptions, narratives, historical sketches, epic and lyric poems, explanatory and oral reductions; grammar: theory of grammar and analysis, etc.

IV. Reading: more difficult prose selections from recent classical poets; composition, general and special; the kinds of speech-presentation; exercises in sentence construction; prosody: feet, the most important measures; kinds of poetry; geographical and scientific descriptions; metrical exercises.

V. Reading: history of literature; most important parts of the Nibelungenlied; history of literature as far as the Minnesänger; explanation of the forms of middle High German; rhetoric; elocution.

VI. Reading: the history of literature; history of literature from the Minnesänger to the young German school; rhetoric, etc.

VII. Reading: history of literature; history of literature to the present time; rhetoric; essays.

Latin—

[1] Optional subjects.

Latin—

Class I. Etymology, including the regular verbs, written and oral exercises; fables, and sample narratives.

II. Recapitulation and extension of etymology; theory of the simple sentence; theory of the compound sentence; written exercises at home and in class; author, Cornelius Nepos.

III. Recapitulation of etymology; theory of case and agreements; prepositions and pronouns; principal rules in the compound sentence; Cornelius Nepos; Cæsar, de bello Gallico.

IV. The simple sentence; syntax of the compound sentence; written exercises; Cæsar: de bello Gallico, or de bello civil.; Ovid: Latin verse.

V. Grammar and exercises thereon; Cicero: the orations; Livy; Virgil.

VI. Recapitulation of the syntax; translations and extemporaneous constructions; reading: Cicero, the orations; Sallust; Horace, odes and satires.

VII. Exercises in composition; reading: Horace, the odes and epistles; Plautus, Tacitus: Germania, Agricola, or parts of the annals and histories.

Greek—

Class III. Grammar, as far as the formation of the future and weak aorist; verbs in ω; oral and written translations.

IV. First principal conjugation; second conjugation; verbs in μι; irregular verbs; most important rules of syntax; oral and written exercises; Xenophon: the Anabasis, and the Kyropædia.

V. Repetition of the etymology; the syntax of the simple sentence; theory of agreement; use of case; propositions; old and new Ionic dialect; written home exercise; class exercises; Xenophon; Homer, the Odyssey; Lysias, the Orations; Herodotus.

VI. Grammar: verbs and tenses; syntax of the compound sentence; exercises; Homer, the Iliad; Demosthenes; Sophocles, a tragedy.

VII. Recapitulation of grammar; exercises in composition; Demosthenes, Sophocles, Plato. (Apology, Crito, Euthyphro, Phædo.

French—

Class I. Pronunciation, etc.; etymology; indicative of the auxiliary verbs, "*avoir*" and "*ehe*," and the first principal conjugation.

II. Recapitulation; conjugations of the regular verbs; adverbs and numerals.

III. Recapitulation; pronouns; irregular verbs; reading, fables, anecdotes, descriptions, short stories, poetry, dictation; reduction; written home work.

IV. Grammar (recapitulation); tense, infinitives, and participles; reading, narratives, descriptions, poems; written home work.

V. Grammar; syntax of substantives, adjectives, pronouns, prepositions, conjugations, etc.

VI. Etymology; most important synonyms.

VII. Grammar.

In classes V, VI, VII two authors a year are read, and in class V also, a historian, and modern play. In classes VI and VII a classical play, and a more difficult historian. The reading is selected from among the following, which, however, may be modified from time to time.

1, Michaud, Histoire de Croisades; 2, Thiers, Expédition de Bonaparte en Egypte; 3, Thiers Campagne d'Italie; 4, Erckmann-Chatrian, Histoire d'un Conscrit; 5, A. Daudet, selected narratives from; 6, J. Verne, Le Tour du monde en 80 yoirs; 7, O. Feuillet, Le Village; 8, Sandeau, Mlle. de la Seiglière; 9, Thierry, Histoire d'Attila; 10, Lanfrey, Campagne de 1806–7; 11, Durny, Siècle de Louis XIV; Racine, Athalie; 13, Racine, Phèdre; 14, Molière, Les précieuses ridicules; 15, Corneille, Le Cid; 16, Franz, Pulpit orator; 17 Voltaire, Zaïre.

Italian—

Class III. Grammar; etymology, excluding irregular verbs; reading, Silvio Pellico, Prigioni; conversation; written work; dictation; translation of important grammatical phrases from the authors read.

IV. Grammar; recapitulation of last year's work; irregular verbs; reading and conversation in continuation of last year's work; written work in increasing difficulty.

V. Grammar and syntax; reading, Manzoni, I promessi sposi; Adelchi, Carmagnola; poems; conversation; dictation of dialogues; letters; short biographical sketches from the most celebrated authors, and places from the classics.

VI. Grammar, recapitulation; conversation; reading: Dante, selections from the Divina Commedia; Tasso, selections from the Gerusalemme liberata; Manzoni, Sketch of the history of Italian literature; written exercises; dictation, translation, and free exercises upon special themes.

VII. Grammar as in preceding class; reading, and history of literature in continuation of last class; dictation with orthographical, grammatical, and syntactical difficulties letters, etc.

English—

Class III. Etymology, important oral and written exercises.

IV. Etymology, conversation, etc.

V. Grammar; theory of the sentence; reading of easy authors—Irving, Sketch Book; Marryat, The Three Cutters, etc.; Dickens, A Christmas Carol; Macaulay, History of England; sketch of history of English literature; written exercises; composition.

VI. History of English literature; Shakespeare; Julius Cæsar, Macbeth, King Richard II; Sir Walter Scott, Lady of the Lake,; Byron, Milton; letters and essays.

Mathematics—

Mathematics—

Class I. *Arithmetic*—Common and decimal fractions; applications.
II. Continuation of computation with decimals; proportion; percentages.
III. *Algebra*—The first four operations with ordinary magnitudes; equations of 1st degree, with one unknown; extraction of square and cube root; ratio.
Geometry—Congruence, equality, similarity of figures; theory of circle; calculation of areas.
IV. *Algebra*—Surds and indices; equations of 1st degree, with several unknowns; of 2nd degree, with one unknown; logarithms, interests, annuities, etc.
Geometry—Computation of circle; *construction of algebraic expressions;* the elements of stereometry; surface and volume of bodies.
V. *Algebra*—Arithmetical and geometrical progressions; exponential equations; interests, etc.; quadratic equations, with two unknowns.
Geometry—Plane trigonometry, stereometry.
VI. *Algebra*—Combinations; binomial theorem; graphical representation of functions; *Regula falsi*; complex numbers; binomial and exponential series.
Geometry—Spherical trigonometry, its applications to mathematical geography; analytical geometry; point, line, circle, parabola, ellipse.
VII. *Algebra*—Logarithmic and the simpler trigonometrical series; recapitulation.
Geometry—The hyperbola; recapitulation.

Science—

Class III. *Botany*—Determination of plants; botanical excursions; sketch of natural orders; anatomy of plants; morphology of plants, and elements of their physiology.
IV. *Zoology*—The physical form, its structure, and health in man; sketch of the seven types in the animal kingdom, special regard being paid to the vertebrates and anthropoda.
V. *Physics*—Mechanics of solid, fluid, and gaseous bodies; general properties of bodies; theory of wave systems.
Chemistry—Fundamental ideas; affinity; theory of molecules, atoms; law of multiple proportion; chemical symbols; valency; the metalloids.
VI. *Physics*—Magnetism; frictional and static electricity; optics.
Chemistry—The heavier metals and their salts.
VIII. *Physics*—Theory of heat, acoustics.
Chemistry—Recapitulation course.

The relation of physics to physical geography is indicated.

History—

Class I. History of the Greeks and Romans; history of the Middle Ages to the Crusades.
II. History of the world; most important elements of history, from the Crusades to 1815; history of Switzerland; the earlier history of Helvetia in connection with the history of the world; the most important events since the founding of the Swiss Confederation until the present time.
III. The history of the Oriental nations, and of Rome during the Empire; history of the Greeks and Romans.
IV. History of the World, from the Middle Ages to the discovery of America, then to the Thirty Years' War; history of Switzerland up to the time of the Reformation.
V. History of the World from the discovery of America to Louis XIV, then the French Revolution; history of Switzerland.
VI. History of the World from Louis XIV to the Vienna Congress of 1815; Swiss history up to 1848.
VII. Recapitulation of the history of the World, 1815–1870; Swiss history, 1815–1874.

Geography—

Class I. Switzerland and its boundaries; general geography of Europe; cartography.
II. Europe; other countries.
III. Mathematical and physical geography; ethnology; Europe.
IV. The four extra European continents.

Book-keeping—

Class I. Part 11 of Zähringer's text book.
II. Part 12.

Drawing—

Class I. Recapitulation of straight-line and curved-surface ornaments; drawing of conventionalised (*stilisirter*) plants, etc., on boards, etc.
II. Curved ornaments; colouring; method; drawing from Nature.
III. Fundamental principles of perspective in application to the drawing of art-forms.
IV. Continuation of same; perspective applied to natural objects; various types of treatment.
V–VII. (Optional.) Continuation of the preceding.
Other subjects do not need special mention.

27. *Secondary System of Basel.*—The schools of Basel are very finely built and equipped; nevertheless, they are free, not only to the Swiss but also to foreigners. The St. Blaise school and Realschool are particularly noble buildings. The chemical, physical, electrical, mechanical, mineralogical, petrological, and natural history cabinets at the schools are excellent. Basel has about 120,000 inhabitants, and is said to spend yearly about £120,000 on education—that is, no less than £1 per inhabitant, or about £10 per scholar.

Its system approaches very closely to the German, as the programmes hereunder will shew.

In the Realschule of Basel there is a lower Realschool common to all pupils. This has four classes, and entrance takes place normally at 10 years of age. There are two upper divisions—one a three-years' commercial course and the other a three years and a half scientific course. This latter is better also even as regards languages. The curriculum includes neither Greek nor Latin. The following programme exhibits its features :—

Programme in the Realschool of Basel, 1901–2.[1]

Subjects.	Lower Realschule. Classes and hours per week.				Upper Realschule.—Classes and hours per week.						
					Realschool.				Commercial Class.		
	I.[2]	II.	III.	IV.	I.	II.	III.	IV. Half-year.	I.	II.	III.
Religion (optional)	2	2	...	...	...	...	...	...	...	...	...
German	4	4	4	4	4	4	4	3	4	3	3
French	5	5	5	5	4	4	4	3	4	4	4
English	...	...	...	3	4	4	3½	3	4	4	4
Italian	...	...	...	...	...	...	...	...	...	4	4
History	1	2	3	2	3	2	2	...	2	2	2
Geography	2	2	2	2	...	...	...	1	2	2	2
Natural History	2	2	2	2	2	2	2½	2	2	...	...
Physics	...	...	...	2	2	2	2	3	3	...	...
Chemistry	...	...	...	...	...	2	2	2[3]	...	2	2
Arithmetic and Algebra	4	4	3	4	3	3	3	3	2	2	2
Geometry	...	...	3	3	3	3	3	2			
Descriptive Geometry	...	...	...	...	...	...	2	2	...	...	...
Mechanics	...	...	...	...	...	...	...	4	...	...	...
Technical Drawing	...	...	...	...	2	2	2	2	...	...	...
Freehand Drawing	2	2	2	2	2	2	2	2	...	...	...
Writing	2	2	2	...	...	...	...	...	...	...	...
Gymnastics	2	2	2	2	2	2	...	...	2	2	...
Singing	2	2	2	...	...	...	..	...	...	...	...
Commercial Arithmetic	...	...	...	...	...	...	...	...	4	3	2
Book-keeping and Accountancy	...	...	...	...	...	...	...	...	2	3	4
Commercial Science	...	...	...	...	...	...	...	...	...	1	3
	28	29	30	31	31	32	32	32	31	32	32

It was proposed to change the programme of the Upper Realschool, and though the matter had not been officially dealt with at the time of the Commissioners' visit, no doubt it has since been altered to the following :—

Programme of the Upper Realschool of Basel, 1902.[4]

Subjects.	Classes and hours per week.				
	I.	II.	III.	IV.	V. (Half-yearly only.)
German	4	4	4	3	4
French	4	4	3	3	3
English	3	3	3	3	3
History	2	2	2	2	2
Geography	2	2	...	...	2
Natural History	2	2	3	3	2
Chemistry	...	2	2	2	2
Physics and Mechanics	2	2	3	3	3
Arithmetic and Algebra	3	3	3	2	3
Geometry	3	2	3	3	2
Descriptive Geometry	...	...	...	2	2
Technical Drawing	2	2	2	2	2
Freehand Drawing	2	2	2	2	2
Gymnastics	2	2	2	2	...
Totals	31	32	32	32	32

[1] Bericht der Realschule zu Basel, 1901–2. Basel, Buchdruckerei, K. J. Wyss, 1902.
[2] Entrance at 10 years of age.
[3] With laboratory practice.
[4] Unterrichtsplan der Obern Realschule, zu Basel ; I—Realabteilung, 1902. This was not official at the time of the Commissioners' visit, but probably has long ago been made official.

The

The pupils are 14 years of age at entrance, and must have gone through the Lower Realschool or an equivalent course.

The Gymnasium differs from the above in including Latin and Greek; thus the general idea of organisation is similar to the German. Children must be 10 years of age at date of entry. The programme is as follows:—

Programme of the Gymnasium in Basel.[1]

Subjects.	Lower Gymnasium. Classes and hours per week.					Upper Gymnasium. Classes and hours per week.			
	I.	II.	III.	IV.	Par.	I.	II.	III.	IV.
Religion	2	2	...	...	...	...	...	...	2
Latin...	7	7	8	8	...	8	8	8	7
Greek	...	...	...	6	...	6	6	6	6
French	...	5	5	3	...	3	3	3	3
English	...	...	...	...	3	...	...	...	...
German	4	3	3	2	...	3	3	3	3
History	2	2	2	2	2	3	4	4	4
Geography	2	2	2	1	...	...	...	...	...
Mathematics	4	3	4	4	1	4	4	3	3
Natural History	...	...	2	2	...	2		...	...
Physics, Chemistry	...	...	...	...	...	...	2	2	2
Writing	3	2	1	...	...	...	...	...	...
Singing	2	2	1	...	...	...	...	...	...
Gymnastics	2	2	2	2	...	2	2	2	1
Drawing (optional)... ...	...	(2)	(2)	(2)	..	...	...	...	...
Hebrew (optional)	...	...	...	...	...	...	...	(2)	(3)
	28	30 +2	30 +2	30 +2	6 Instead of Greek.	31	32	31 + (2)	31 + (3)

It may be mentioned that in Basel the practice of publishing an Appendix (*Wissenschaftliche Beilage*) with the Annual School Report (*Bericht*), which is a regular feature in Germany, was noticed. For example: the "*Bericht der Realschule zur Basel*, 1901–2," contains a paper on Quadratures by Professor Dr. Hermann Kinkelin. It is an investigation of the static moment of a certain class of bodies, and its application to the approximation calculation of definite integrals.

The schools of Basel and their equipments were among the best seen in Switzerland, and recent expenditures on the scientific apparatus were lavish.

28. *Cantonal School of Appenzell, Ext.*—The organisation of the Cantonal School of Appenzell, Ext.,[2] is comprehensive. It comprehends the following divisions and classes:—

(1) A Secondary School (Sekundarschule), closing with Class III.
(2) A mercantile division (Merkantilabteilung), closing with Class IV, and embracing the three first classes.
(3) A technical division (Technische Abteilung), intended specially to prepare for the Polytechnicum. This closes with the first semester of Class VI.
(4) A gymnasium, preparing for the maturity examination (Maturitätsprüfung), so as to qualify for entrance into the University. This closes with the second semester of Class VI. The gymnasium is divided into two branches, viz., the Classical Gymnasium with Greek (Literargymnasium, mit Griechisch), and the Modern Gymnasium without Greek (Realgymnasium ohne Griechisch).

The programmes are as hereunder:—

Programme of the Cantonal School in Trogen.

Secondary School.—Classes I–III.

Subjects.	Classes and hours per week.			Subjects.	Classes and hours per week.		
	I.	II.	III.		I.	II.	III.
Religion	2	2	2	Physics	...	...	2
German	5–6	5	4	Chemistry	...	...	1
French	5	4	4	Book-keeping (one division)	...	...	1
English	...	3[3]	3[3]	Caligraphy	2–3	2	1
Italian...	...	...	3[3]	Freehand Drawing... ...	2	2	2
Arithmetic	4	3	2	Geometrical Drawing ...	2	2	2
Algebra	...	...	2	Singing	2	2	2
Geometry	2	2	2	Gymnastics...	2	2	2
History	2	2	2				
Geography	2	2	2	Total obligatory hours	34–36	32	34
Natural History	2	2	1				

[1] Bericht über das Gymnasium in Basel.
[2] Lehrplan der Kantonsschule von Appenzell A. Rh. in Trogen. Came into force, 4 August, 1897.
[3] These subjects are optional.

The

The mercantile divison is as follows:—

Mercantile Division.— Class IV.

Subjects.	Hours.	Subjects.	Hours.
Religion	1	Commercial Geography	2
German	4	Natural History	2(1)[1]
French	3	Chemistry	2
French-German Commercial Correspondence	1	Book-keeping (double entry) and Caligraphy	2
English	2[1]	Freehand Drawing	2
English Commercial Correspondence	1[1]	Geometrical Drawing	2[1]
Italian	3[1]	Singing	2
Arithmetic	2	Gymnastics	2
Algebra	2[1]		
Geometry	2[1]	Obligatory hours	26
History	3		

The following is the programme of the technical division:—

Technical Division.

Subjects.	Classes and hours per week.			Subjects.	Classes and hours per week.		
	IV.	V.	VI.		IV.	V.	VI.
Religion	1	1	1	Natural History	2 (1)	2	2
German	4	4	3–4	Physics	(2)	3	4
French	3	3	3	Chemistry	2	2	1
English	2[1]	3[1]	3[1]	Freehand Drawing	2	2[1]	2[1]
Italian	3[1]	...	...	Geometrical Drawing	2	2	2
Algebra	2	2	3	Singing	2	...	...
Geometry	2	2	2	Gymnastics	2	2	2
Descriptive Geometry	...	2	2				
History	3	3	2	Obligatory hours	27 (28)	28	29 (30)
Geography	...	...	2				

In the Gymnasium programmes it will be noticed that English is obligatory in the Realgymnasium and optional in the Classic Gymnasium.

Classical Gymnasium with Greek.

Subjects.	Classes and hours per week.				
	II.	III.	IV.	V.	VI.
Religion	2	2	1	1	1
German	5	4	4	4	3–4
Latin	5	5	6	6	6
Greek	...	5	5	6	6
French	4	4	3	3	3
English	3[1]	3[1]	2[1]	3[1]	3[1]
Arithmetic	3	...	...	...	...
Algebra	...	2	2	2	1
Geometry	2	2	2	2	2 (1)
History	2	2	3	3	2
Geography	2	2	...	...	2 (1)
Natural History	2	1	2 (1)	2	2 (1)
Physics	..	...	(2)	3	2 (1)
Chemistry	...	...	2	2	(1)
Caligraphy	2	...	...	...	...
Freehand Drawing	2	2	2[1]	2[1]	2[1]
Singing	2	2	...	...	...
Gymnastics	2	2	2	2	2
Obligatory hours	35	35	32 (33)	36	32–33 (29–30)

[1] These subjects are optional.

Real

Real Gymnasium without Greek.

Subjects.	Classes and Hours per Week.				
	II.	III.	IV.	V.	VI.
Religion	2	2	1	1	1
German	5	4	4	4	3–4
Latin	5	5	6	6	6
French	4	4	3	3	3
English	3	3	2	3	3
Arithmetic	3	...	...	...	...
Algebra	...	2	2	2	1
Geometry	2	2	2	2	2 (1)
History	2	2	3	3	2
Geography	2	2	...	...	2 (1)
Natural History	2	1	2 (1)	2	2 (1)
Physics	...	...	... (2)	3	2 (1)
Chemistry	...	...	2	2	... (1)
Caligraphy	2	...	...	...	...
Freehand Drawing	2	2	2	2[1]	2[1]
Singing	2	2	...	...	...
Gymnastics	2	2	2	2	2
Obligatory hours	38	34	31 (32)	33	29–30 (26–27)

Entrance into Class I takes place at 12 years of age. It will be seen that the *Kantonsschule* is of a type eminently suitable for towns of somewhat limited total population, where it is necessary to localise all the higher teaching in a single establishment with suitable divisions.

29. *Realschools in the Canton of Schaffhouse.*—The Realschools of the Canton of Schaffhouse are higher Folkschools. Entrance into the 1st class takes place not earlier than at 11 years of age, and after five years' attendance in the elementary school.

There are three types of school, viz., what are known as one-class, two class, and three-class schools. In the one-class school there are two divisions. The programmes are as hereunder:—

Programmes of Realschools in the Canton of Schaffhouse.

Subject.	I Class.		II Class.		III Class.		
	Divisions.		Classes.				
	1st Div.	2nd Div.	(I.)	(II.)	(I.)	(II.)	(III.)
Religion or Ethics	2	1–2	2	1–2	2	2	1–2
German	4–6	4–5	4–6	4	4–5	4–5	4
French, Latin	5–6	5–6	5–6	5–6	5–6	5–6	5–6
Arithmetic	4–5	4	4–5	4	4–5	3–4	4
Geometry	2	3	2	3	1–2	3	3
Natural Science	2–3	2–3	2–3	2–3	2–3	2–3	3
History	2	2	2	2	2	2	2
Geography	2	2	2	2	2	2	2
Writing	1–2	1–2	1–2	1–2	2	2	1–2
Drawing	2	2–4	2	2–4	2	2	2–4
Singing	2	1–2	2	1–2	2	1–2	0–2
Gymnastics	2	2	2	2	2	2	2
Book-keeping	...	1	...	1	...	...	1

30. *Qualification of Secondary Teachers.*—The scheme of professional qualification for teachers in secondary and middle schools in Switzerland varies from canton to canton. In Zurich, which may be taken as affording a good example of the Swiss methods, a secondary school teacher must qualify as a teacher of an elementary school, and obtain afterward a diploma for the higher grade of teaching. He must have served for at least one year as a primary school teacher, and have studied at the University, for a period of two years, the subjects he specially undertakes to teach. If, however, he teaches languages, one year may have been spent in the country whose language he professes.

An account of the training of the primary teacher has been given in the Interim Report. (See Chap. XXXVII, pp. 343–351; and also Chap. XL, pp. 361–370.) Zurich has regulations governing the professional preparation for secondary teaching.[2]

The

[1] These subjects are optional.

[2] Das Reglement über die Fahigkeitsprüfungen zur Patentirung zürcherischer Sekundarlehrer, vom 24 Mai, 1896.

The qualifying examination for the teaching in secondary schools is specialised, and embraces, in addition to (1) Pædagogy with Psychology, (2) Methodology, (3) German, and (4) French, one of the following, viz.:—

(*a*) English, or Italian, or Latin.
(*b*) History of the World, history of Switzerland.
(*c*) Physical Geography with Ethnology.
(*d*) Mathematics and Mathematical Geography.
(*e*) Physics, together with Physical Geography.
(*f*) Chemistry.
(*g*) Geology and Mineralogy.
(*h*) Botany.
(*i*) Zoology.

Not only must the students have attended lectures at the University, they must also have done the necessary laboratory work, etc.

The examination of every candidate is partly written and partly oral. Under supervision, he must produce an essay in German and one in French, and he must present a thesis in his principal subject. Besides this, he must submit to an examination in his selected subject or subjects.

The Bernese regulations do not materially differ.[1]

In the middle schools, higher again than the so-called secondary, there is no definitely-organised system of special qualification. No applicant, however, for a post as professor in a middle school who did not possess much higher qualifications than those required of teachers in primary schools would have any chance of appointment. In general, the educational reputation of those appointed is so well assured, that there is no difficulty in deciding as to their appointment, and the school authorities may in any case hold such examination as they think fit.

It may be repeated here that Swiss teachers are urged to perfect their qualifications, and special continuation courses during vacations are held. One of these the Commissioners had an opportunity of seeing.

31. *Conclusions regarding Swiss Schools.*—The Swiss systems, it will be seen, are not so definitely organised for the secondary or intermediate stages of education as the German. Nevertheless, the education given is excellent, and the high traditions, which, as it was pointed out, govern the elementary stages of education, are by no means without influence on the secondary educational systems.

The Swiss systems are more democratic than the German; and if their aim for the secondary stage is less well assured, at least they aim higher in the primary stages of education and in the education of the masses.

Throughout, the schools are so equipped that proper instruction can be given in the scientific subjects, and this applies to all grades. The scheme of passing on to the high schools (*i.e.*, the Polytechnica and the Universities) is by the Certificate of Maturity.

The vigour of Swiss education depends upon the excellent educational traditions of the country, the lavish expenditure on educational buildings and their equipment, the excellence of the professional education of the primary school teacher. This influences secondary education by ensuring that the traditions as to what constitutes a reasonable qualification for the teachers are well assured, and the higher grades of teachers are undoubtedly men of ability.

At the same time, the secondary schools proper of Switzerland cannot, under the existing régime, attain throughout that excellence to which the German system promises to lead. On the other hand, the educational problem of the Swiss is not quite identical with that of Germany, owing to its social and political organisation and its traditions. In its higher planes, Swiss education is less under the influence of a rigid educational scheme, and is more dependent upon the wisdom of local school authorities in their judgment as to suitable appointments.

Where a community is highly educated this is fairly safe, and liable to be prejudiced only by favouritism and nepotism to a limited extent. It would, as far as the Commissioners could judge, be quite impossible, however, to appoint any but *highly*-qualified teachers to the secondary schools of Switzerland, or put them under directors who did not command public respect through their educational eminence.

In the march of events, however, the mechanism of ensuring thorough professional qualification of teachers is tending toward the more developed, if less elastic, régimes of Germany and France.

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[1] Reglement für die Patentprüfungen von Sekundarlehrern des Kantons Bern vom 16 October, 1897.

CHAPTER XXVIII.

CHAPTER XXVIII.

Secondary Education in other European Countries.

[G. H. KNIBBS.]

1. *Introductory.*—Secondary education in Finland, Norway, Sweden, and in other parts of Europe not already dealt with, is well worthy of a full delineation. We have no secondary school in Australia comparable in equipment to the secondary schools of Helsingfors, Kristiania, or Stockholm; neither are we able, with our educational apparatus, to provide opportunities for secondary education equal to that provided in the capitals of Finland, Norway, or Sweden.

What is added hereunder must be taken as furnishing further evidence as to our educational status. It will suffice to give one or two examples for each country.

2. *Swedish Normal Lyceum of Helsingfors.*—The following information is derived from the publication of the Swedish Normal Lyceum (in Swedish),[1] an annual volume of about sixty pages. The 1902 number is pp. 61 + Appendix,[2] pp. 31.

The Lyceum has eight classes, Latin being taken in the third, German in the fourth, and Greek in the fifth. The last, however, is an *optional* language. It may be stated that, throughout the northern part of Europe, it is recognised that Latin and Greek are not the only path of culture. The curriculum is as hereunder:—

Curriculum in the Swedish Normal Lyceum of Helsingfors, Finland.

Subjects.	Classes.								Totals.
	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	
Religion	2	2	2	2	2	2	2	2	16
Swedish	4	2	2	2	2	2	2	2	18
Finnish	4	4	4	4	2	2	2	2	24
Russian	4	2	2	2	4	4	6	6	30
Latin	...	...	6	6	8	6	6	6	38
German	...	...	...	4	2	2	2	2	12
Greek	...	...	...	...	[4]	[4]	[4]	[4]	[16]
Psychology and Logic	...	...	...	...	...	...	[2]	[2]	[4]
French	...	...	...	...	...	[2]	[2]	[2]	[6]
Geography and History	4	6	6	2	2	4	2	2	28
Mathematics	4	6	4	4	4	6	4	4	36
Physics	...	...	...	...	...	...	2	2	4
Natural History (Botany and Zoology)	2	2	2	2	2	...	...	...	10
Caligraphy	2	2	...	...	...	...	...	...	4
Singing	2	2	[1]	[1]	[1]	[1]	[1]	[1]	4 [10]
Gymnastics	3	3	3	3	3	3	3	3	24
Total	31	31	31	31	31	31	31	31	...
With optional subjects	...	...	[32]	[32]	[32]	[34]	[34]	[34]	...

The subjects the hours for which are bracketed are *optional.* Where there are no brackets the course is compulsory. The staff of this Lyceum consists of—

4 Oefverläraren (Professors).
3 Lektorn (Lecturers).
4 Kollegan Lektorn (Assistant Lecturers).
1 Lärare (Teacher).
4 Vikarierande lärare (Occasional Teachers).

3. *Swedish Real-Lyceum in Helsingfors.*—It is perhaps unnecessary to give the detailed curriculum of the Swedish Realgymnasium of Helsingfors in Finland. The following translation of the time-table will be of interest as shewing the distribution of the time. As is very often the case in European schools, it is a *printed* document for general information.

It will be noticed that the Saturdays are occupied as well as other days. *Swedish*

[1] Svenska Normallyceum i Helsingfors, Berättelse afgifven till det offentliga Årsförhöret den 31 Maj, 1902, af V. T. Ros qvist, Rektor. Helsingfors Tidnings-& Tryckeri-Aktiebolagets Tryckeri 1902.
[2] Maria Stuarts regering i Skottland, af Emil Böök.

Time.	I A.	I B.	II A.	II B.	III A.	III B.	IV A.	IV B.	V A.	V B.	VI.	VII.	VIII.
Monday—													
8–9	Mathematics	Singing	Russian	Russian	Religion	Mathematics	German	History	Gymnastics	Swedish	French	History	Mathematics
9–10	Geography	Mathematics	Nat. History	Religion	Russian	German	Gymnastics	Swedish	German	History	Mathematics	German	Russian
10–11	Russian	Finnish	Caligraphy	Mathematics	History	Russian	Mathematics	Nat. History	History	German	Mathematics	Swedish	Religion
1–2	Caligraphy	Nat. History	Finnish	Gymnastics	Swedish	History	.....	.....	.....	.....	.....	.....	.....
2–3	Finnish	Russian	Gymnastic	Geography	German	Nat. History	Nat. Science	Finnish	Russian	Geography	Russian	French	Drawing
3–4	Gymnastics	Gymnastics	.....	....	....	.....	Russian	Drawing	Swedish	Nat. Science	History	Russian	French
5–6	....	.....	.....	... .	.....	.....	.....	..... .	.....	.....	.....	.....	English
6–7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	English	.....
Tuesday—													
8–9	Religion	Singing	History	Russian	Gymnastics	Mathematics	Finnish	Russian	Russian	German	Mathematics	Russian	History
9–10	Gymnastics	Religion	Geography	Finnish	Mathematics	German	Russian	Mathematics	History	Russian	Russian	Mathematics	French
10–11	Russian	Caligraphy	Swedish	Mathematics	Geography	Gymnastics	Mathematics	Religion	Finnish	Nat. History	Russian	Mathematics	German
1–2	Swedish	Finnish	Finnish	Caligraphy	Mathematics	Nat. History	Swedish	Gymnastics	Geography	Mathematics	French	Religion	Swedish
2–3	Singing	Russian	Mathematics	History	Nat. History	Finnish	History	German	Religion	Mathematics	German	Gymnastics	Finnish
3–4	.....	.. ..	.....	.....	....	.....	Bookkeeping	.....	.....	.....	Gymnastics	.....	.....
Wednesday—													
8–9	Mathematics	Singing	Gymnastics	Nat. History	Finnish	Mathematics	Religion	History	Russian	Russian	Russian	Physics	French
9–10	Nat. History	Mathematics	Mathematics	Geography	Russian	Swedish	Drawing	Russian	Mathematics	Religion	Finnish	Russian	Mathematics
10–11	Geography	Swedish	Russian	Gymnastics	Drawing	Finnish	Finnish	Nat. History	Mathematics	Mathematics	Mathematics	Russian	Religion
1–2	Finnish	Geography	Religion	Swedish	German	Russian	Nat. History	Finnish	Nat. Science	Drawing	History	French	Gymnastics
2–3	Singing	Finnish	Mathematics	Finnish	Gymnastics	Drawing	Swedish	Nat. Science	German	History	Religion	German	Russian
3–4	.. ..	.....	.....	.....	....	.....	Gymnastics	Gymnastics	Bookkeeping	.....	.....	.....	.....
5–6	....	.....	.....	.....	.....	Gymnastics	.....	.....	.....	.....	.....	.....	.....
Thursday—													
8–9	Finnish	Mathematics	Russian	Russian	Religion	Russian	German	Swedish	Mathematics	German	French	Mathematics	History
9–10	Caligraphy	Gymnastics	Geography	Mathematics	Finnish	German	Russian	Religion	Swedish	History	Russian	French	Physics
10–11	Russian	Swedish	Finnish	Religion	Mathematics	Mathematics	History	German	Nat. History	Swedish	Mathematics	Gymnastics	Russian
1–2	Mathematics	Finnish	Caligraphy	Nat. History	Russian	Drawing	Finnish	History	History	Mathematics	German	Religion	Gymnastics
2–3	Singing	Russian	Mathematics	Geography	German	Religion	Drawing	Mathematics	Russian	Finnish	Gymnastics	History	Finnish
3–4	.....	.....	.....	.....	.....	.....	.....	Bookkeeping	Gymnastics	Gymnastics	.....	.....	.....
5–6	.. ..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	English
6–7	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	English	.....
Friday—													
8–9	Finnish	Nat. History	Mathematics	Singing	German	History	Religion	Mathematics	Mathematics	Russian	Swedish	French	Mathematics
9–10	Russian	Religion	Finnish	Mathematics	Swedish	Geography	Mathematics	Russian	German	Nat. History	French	Russian	Mathematics
10–11	Geography	Russian	Russian	Finnish	Nat. History	Finnish	Mathematics	German	Religion	Mathematics	Gymnastics	Mathematics	Russian
1–2	Swedish	Geography	Nat. History	Caligraphy	Mathematics	Gymnastics	History	Mathematics	Nat. Science	Finnish	Drawing	Finnish	French
2–3	Mathematics	Mathematics	Singing	Russian	History	Swedish	German	Gymnastics	Finnish	Nat. Science	History	Drawing	German
3–4	.....	.....	. .....	....	.....	.....	.....	....	.....	Bookkeeping	.....	Gymnastics	Gymnastics
4–5	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	....
5–6	.....	.....	.....	.....	Gymnastics	.....	.....	.....	.. ..	.....	.. ..	.....	.....
Saturday —													
8–9	Religion	Russian	Russian	Swedish	Drawing	Mathematics	Mathematics	German	Nat. History	Finnish	Finnish	Physics	Russian
9–10	Russian	Geography	Swedish	Mathematics	Mathematics	Religion	Gymnastics	Russian	German	German	Mathematics	Finnish	Russian
10–11	Swedish	Gymnastics	Religion	Finnish	History	German	Russian	Mathematics	Mathematics	Russian	French	Russian	Physics
1–2	Nat. History	Swedish	Geography	Mathematics	Russian	Russian	German	Drawing	Finnish	Gymnastics	Religion	History	French
2–3	Gymnastics	Caligraphy	Mathematics	Russian	Finnish	History	Nat. History	Finnish	Drawing	Religion	Russian	French	History
3–4	.....	.....	Gymnastics	Gymnastics	.....	.....	.....	.....	.....	.....	.. ..	.....	.....

4. *Finnish Ladies' School in Helsingfors.*—The character of education provided for girls can be gathered from the curriculum of a Finnish Ladies' School in the Finnish capital.[1] The ages given are only approximate. The average age in the last class is actually 16·72. The detailed curriculum is as follows :—

Curriculum, Finnish Ladies' School.

Subjects (Oppiaineet).	Hours per Week.							Totals (Yhteensä tunteja).
	Preparatory (Valm. 1.)		Girls' School (Tyttokoulusso).					
Classes (Luokat). Average age...	(1) 10.	(2) 11.	I. 12.	II. 13.	III. 14.	IV. 15.	V. 16 or 17.	
Religion (Uskontoa)	3	2	2	2	2	2	2	15
Finnish (Suomea ja Ainekirjoitusta)	6	5	3	2	2	3	2	23
Swedish (Ruotsia)	...	4	2	2	2	2	2	14
German or French, full course (Saksaa tai Ranskaa, pitkäkursii)	...	...	6	5	5	5	5	26
German, French, English or Russian (Saksan, Ranskan, Englannin tai Venäjän kielta, komp. kurssi)	...	...	...	...	2	3	3	8
History (Historiaa)	...	...	2	2	2	2	4	12
Geography (Maantiedettä)	4	4	2	2	1	1	...	14
Mathematics (Matematiikkaa)	3	4	4	4	4	4	3	26
Zoology and Botany (Eläin-ja kasvioppia)	...	...	...	2	2	2	...	6
Physics (Fysiikkaa)	...	...	...	...	...	...	2	2
Hygiene (Terveysoppia)	...	...	...	...	...	...	1	1
Caligraphy (Kaunokirjoitusta)	2	2	2	2	...	...	...	8
Drawing (Piirustusta)	...	...	...	...	2	2	2	6
Singing (Laulua)	2	2	2	2	1	1	1	11
Gymnastics (Voimistelua)	3	3	3	3	3	3	3	21
Manual Work (Käsitöitä)	3	2	2	2	2	...	...	11
Totals (Yhteensä)	26	28	30	30	30	30	30	204

The course in the High School includes Psychology, the Theory of Education, etc. The curriculum is as hereunder :—

Continuation High School, Helsingfors.

Subjects.	Division (Osastot).			
	I.	II.	III.	Totals.
Finnish (Äidinkieltä ja isänmaan kirjallisuutta	3	3	...	6
Psychology (Sielutiedettä)	2	...	...	2
Theory of Education (Kasvatus-oppia)	...	2	4	6
Religion (Uskontoa)	2	2	...	4
Swedish (Ruotsin kieltä)	2	2	...	4
German, full course (Saksaa, pitempi kurssi)	4	4	...	8
German, shorter course (Saksaa, lyhyempi kurssi)	2	2	...	4
History of Finland (Historiaa ja Suomen yhteiskunta-oppia).	4	4	...	8
Geography (Maantiedettä)	2	2	...	4
Mathematics (Matematiikkaa)	4	4	...	8
Science (Luonnontiedettä)	3	3	...	6
Drawing (Piirustusta)	2	2	...	4
Total	36	36	4	76

5. *General remarks on Finnish Education.*—The teachers of Finland are well educated and trained, the educational traditions of Germany and Sweden having had considerable influence thereon. An account of the excellent training of the teachers of the primary schools will be found in the "Special Reports," vol. 3, pp. 690–696.[2] The educational system is good, well-organised, and the schools are well-equipped.

The Commissioners spent but a short time in Finland—sufficient, however, to realise how much attention was paid to education, and to recognise the high character of the work done in the primary and higher schools of the Grand Duchy. Higher technical education is also of an advanced character.

6.

[1] Translated from "Helsingin Suomalainen Tuttökoulu ja Suomalainen Jatko-Opisto, 1901–2. Helsingissä, Suomal, Kirjall, Seuran Kirjap, Osakeyhtiö, 1902," pp. 70 (Helsingfors Finnish Girls' School and Finnish Continuation High School). The Finnish names are given as an indication of the great difference of the language.

[2] Special Reports on Educational Subjects, Education Department, London, 1898. Vol, 3, pp. 672–696. By Baron Y. K. Yrjö-Koskinen.

6. *Secondary Education in Norway.*—The last century witnessed a considerable development in the organisation of secondary education in Norway. According to a Regulation of 1809, the principal function of the so-called *learned* schools was to prepare their alumni for the Universities. From 1805, the highest administrative authorities were charged with the direction of both schools and the Universities, but in 1814 the administration passed to a special department, viz., to the Ministerium for Ecclesiastical and Educational affairs. In 1839 a Royal Commission developed a general educational plan for higher education, but it was not accepted by the Storthing[1] in 1845. The prevailing idea was to have a combination to some extent of the classical and scientific elements, the instruction for all pupils of from 10 to 12 to be common, while linguistic instruction was to commence in the first year with German; Latin was to be postponed till 12. In 1858 the legal recognition of English somewhat affected this programme. The normal plan for higher education was organised by the Act of 17th June, 1869. A combined Grammar and Real School (a "*Middelskole*") served the double function of a Middle School and a preparation for more advanced education. There were three divisions, viz., of two years, four years, and two (or three) years respectively, The normal age of entrance was 9, so that the earliest complete career could not possibly end till the beginning of the 18th (or 19th year).

7. *The Middle School of* 1885.—On 18th March, 1885, the plan of the Middle School was made as follows:—

Middle School, Norway, 1885.

Subject.	Class and Hours per Week.					
	I.	II.	III.	IV. E. or L.	V. E. or L.	VI. E. or L.
Religion	3	3	3	2	2	2
Norwegian	8[2]	5	5	4	3	3
German	...	6	5	4	4, 3	4, 3
English	...	...	...	5,—	5,—	5,—
Latin	...	...	...	—,7	—,7	—,7
French	...	...	...	...	2[3]	2[3]
History	3	3	4	3	3	3
Geography	4	2	2	2	2	2
Natural Science	...	2	2	2	3	2
Mathematics	4	4	5	6	5	6
Drawing	...	2	2	2,—	1,—	1,—
Writing	4[4]	3	2	...	...	...
Totals	26	30	30	30	30	30

E. or L. denotes English or Latin division. Thus, 5,— means that English is taken for 5 hours, and that the pupils in the Latin division do not take English; and —,7 denotes that those in the English division do not take Latin, while in the Latin division seven hours are devoted thereto.

8. *The Latin and Real Gymnasia of* 1885.—The Latin and Real Gymnasia were developed in 1885 as hereunder:—

Norway Secondary Schools.

Subject.	Hours per Week.					
	Latin Gymnasium.			Real Gymnasium.		
	I.	II.	III.	I.	II.	III.
Religion	1	1	2	1	1	2
Norwegian and Old Norse ...	3	4	4	3	4	4
Latin	9	10	9	...	...	...
Greek	7	7	7	...	...	...
English	...	...	...	4	5	5
French[5]	4	2	2	4	2	2
German	1	...	...	1	1	...
History	3	3	3	3	3	3
Mathematics	2	3	3	5	6	6
Geography	...	...	...	1	1	2
Natural Science	...	...	...	6	5	4
Drawing	...	...	...	2	2	2
Totals	30	30	30	30	30	30

[1] The Storthing is the Norwegian Parliament, and consists of the Upper House (Lagthing) and the Lower House (Odelsthing).

[3] During the second half of the year, one hour was given to German.

[3] French was optional. If not taken, further instruction could be given in Norwegian, drawing, or physics.

[4] Sometimes one hour was taken for drawing.

[5] Or English, 2, 3 3. Or French *and* English could be taken.

Norway had no very definite system of preparation for the Middle Schools. For example, in 1890 the organisation was as follows :—

Type of School.	No.	No. with Latin Gymnasia.	No. with Real Gymnasia.
State Schools	17	14	5
Communal Schools	37	1	...
Private Boys' Schools	11	7	5
Private Higher Girls' Schools	17	...	...

The Act of 1869 was superseded by the School Act of 27th July, 1896. It may here be noted that the 1869 Act aimed at a connection between the Primary and Higher Schools, so that the former might be the school for all[1] from 6–9 years of age. This was found to be *impracticable*, and the Middle Schools had to have preparatory classes.

In the 1896 Act the Secondary School is divided into the *Middelskole*[2] and *Gymnasium*. The idea was, that the Middle School should have about a four-year course, viz., from 11 to 15 (say), and the Gymnasium a course of three years, to follow on the other.

9. *The Norwegian Middle School of* 1896.—The plan for the Middle School, drawn up by the Church and School Department, was as follows :—

Curriculum of the Norwegian Middle School of 1896.

Subject.	Hours per Week.				Total.
Classes ..... Age	I. 11	II. 12	III. 13	IV. 14	
Religion	2	2	2	1	7
Norwegian[3]	5	4	4[2]	4[2]	17
German[4]	6	5	5	5	21
English[5]	...	5	5	5	15
History	3	2	3	3	11
Geography	2	2	2	2	8
Science	3	2	2	3	10
Mathematics[6]	5	5	5	5	20
Drawing	2	2	2	2	8
Writing	2	1	...	...	3
Gymnastics	3	3	3	4	13
Manual work	2	2	2	2	8
Singing	1	1	1	...	3
Totals	36	36	36	36	144

The law allows Middle Schools to be established, however, in which only one foreign language is taught, and in which the mathematical teaching is very restricted.

10. *Norwegian plan for a Gymnasium of three divisions.*—Some indication of the secondary system of Norway is given in the Interim Report (Chap. VI, secs. 31, 33, pp. 71–73), and the Programme of the Kristiania Cathedral School is sketched in full (p. 72). The following is a plan of instruction drawn up for a Gymnasium with a "Real," a "Language-History," and a "Latin" division.

Curricula of Norwegian Gymnasium.

Subject.	Hours per Week.								
	"Real."			"Language-History."			"Latin."		
Classes ..... Age.....	I. 15	II. 16	III. 17	I. 15	II. 16	III. 17	I. 15	II. 16	III. 17
Religion	1	1	2	1	1	2	1	1	2
Norwegian	4	5	4	4	6	5	4	5	4
German...	3	3	3	3	3	3	3	3	3
English...	4	2	2	4	7	7	4	2	2
French	4	2	2	4	4	3	4	5	...
Latin	...	...	...	...	...	...	...	7	11
History...	3	3	3	3	5	5	3	3	3
Geography	1	1	2	1	1	2	1	1	2
Science	4	5	5	4	1	1	4	1	1
Mathematics	4	6	6	4	2	2	4	2	2
Drawing	2	2	1	2	...	...	2	...	...
Totals	30	30	30	30	30	30	30	30	30

In addition to the above there are six hours a week divided between gymnastics and singing. 11.

[1] In all countries were education is *thorough*, the difficulty in making the folkschool a preparatory school for higher education has been felt. Of course, in an indifferent educational system the difficulty is not even perceived. [2] Middle school. [3] Every alternate week writing supersedes the lesson in Norwegian. [4] Or *English*, 6, 4, 3, 4. [5] Or *German*, 0, 6, 7, 6. [6] Includes arithmetic.

11. *Organisation of Higher Education in Norway.*—The highest authority is the Ecclesiastical and Education Department. To assist the Department in the inspection of schools, and to ensure the proper organisation of the final examinations, there is a *Council of Education* (Undervisningsraad), of seven members specially expert in matters affecting higher education. In all questions of hygiene, a hygienic specialist is admitted into the Council.

Besides this, every State school has its own Board of Management, consisting of the *Rektor*, or headmaster, and four other members. One of these is appointed by the State Department and the other three by the Commune (or municipality).

The Communes are required to provide the State schools with premises, school apparatus and equipment, and lighting and heating.[1]

To become a permanent teacher in a Secondary School, the candidate must have passed one of the examinations for teachers at the University in the literary-historical or mathematical-scientific division. The Government provides annually about £8,300 for travelling studentships for secondary teachers, an example which the Commissioners have already recommended should be followed.

Recently some reforms, having for their object the more thorough practical training of teachers, are being developed. It is felt that high theoretical education should be supplemented by well-organised practical education in the teaching art.

The teachers of a school are—(1) The *Rektor*, or Principal; (2) the Professors (*Overlaerere*); (3) the Assistants (*Adjunkter*). They receive salary, with quinquennial increases.

Their rank is *Rektorer* VII, *Overlaerere* VIII, *Adjunkter* X[2]. Service is counted whether in State or in Communal schools whose teachers are appointed by the Department, and also in all private schools which possess the right of holding examinations. The service counts in questions of increased salary, or appointment to State or Municipal schools.

Rektors have, as a rule, ten to fifteen hours teaching per week; professors and assistants, twenty-four; class teachers, up to thirty.

Pensions are not defined, but each case is dealt with, in its discretion, by Parliament. The three higher classes of teachers are required, if married, to pay regularly to a Widows' Assurance Fund.

The cost of the education of a pupil in the Secondary Schools is about £16 per annum.

12. *Latin and Greek in the Norwegian Schools.*—In the Latin Gymnasium, written and oral *Latin* translation (unseen), facility in translating and explaining selections from Roman literature, accurate and fundamental knowledge of grammar, literary history, mythology, are insisted on.

Cicero's Orations (100 cap.), or Epistles (25 cap.), Cato Major, Cæsar, Curtius, Sallust (Catalina or Jugurtha), Livius, Seneca, Quintilian, Tacitus, Plinius Minor, Vergil (Æneid), Horace, Terence, Plautus are read.

In *Greek*, reading of selections from Greek literature, an accurate knowledge of the grammar, antiquities, Greek mythology, and literary history are required.

The reading includes Xenophon (the Anabasis), Lucian, Plato (the Apology), Homer (The Iliad or Odyssey), Herodotus, Sophocles, Euripides.

13. *Science and Mathematics in Norwegian Secondary Schools.*—The requirements in natural science are that the pupil shall pass through a general course in physics (special importance being attached to mechanics and the theory of heat), through the elements of inorganic chemistry and mineralogy, the main outlines of systematic botany and zoology, and of physiology in connection therewith.

In mathematics, importance is attached to elementary arithmetic and algebra, including the theory of logarithms and the ordinary series, quadratic equations, etc. A thorough knowledge of planimetry, plane trigonometry, stereometry, of the elements of analytical geometry of the straight line, circle, and conic sections, and of the elements of descriptive geometry is required.

14. *Conclusion as regards Norway.*—The above, though it quite inadequately represents the Norwegian educational system, gives a general idea of its character.[3]

15. *Secondary Education in Sweden.*—The Secondary Schools of Sweden are State schools (*Allmänna Läroverk*) and private (*Enskilda Läroverk*). The earliest schools of this character were the Cathedral and Convent Schools. It was not till the time of Gustavus Adolphus [1594–1632] that the higher schools or Gymnasia were founded.

The oldest Gymnasium was that established at Vesterås in 1620 by Johannes Rudbeckius, and the first school organisation was developed in 1649 by the eminent educationist, Komensky (Comenius), who visited Sweden in that year.

Komensky's organisation was a Lesser College (*Trivialskolan*) and a Gymnasium (*Gymnasiet*), usually with a four years' course in each, and this organisation was maintained for two centuries. In the early part of last century the claims of the natural sciences began to make themselves felt,[4] and the necessity of an organisation more in accord with the exigencies of modern life was fully recognised.

During the years 1825–8 there was a Committee known as the Grand Council of Education, among whom were men of great eminence, *e.g.*, Tegner, Geijer, Wallin, Agardh, Berzelius. This Committee produced a remarkable report on the reorganisation of the education, which had, however, no immediate effect.

In 1849 the *Trivialskolan* and *Gymnasiet* were united in a single establishment—the Läroverk, or Lyceum.

Among the reforms which the Swedish educationists regard as advances in educational method and organisation may be mentioned *the abolition of Latin as obligatory, the development of a modern side ("reallinie") without classic languages, the transference of the baccalauréat from the Universities to the Secondary Schools in* 1862, the creation of a period for training for teachers (one year in 1865), the suppression of the lowest class, the organisation of semi-classic teaching in 1869 (Latin, but not Greek).

There are, at the present time, discussions going on as to the desirableness of a greater liberty of choice in higher studies.

16.

[1] Heating is, of course, elaborate in all cold countries.

[2] There are twelve orders of rank, the lowest being XII.

[3] The Commissioner is greatly indebted to Dr. Klaus Hoel, Bureau-Chef of the Ecclesiastical Department in Kristiania, for his great kindness and for the information he kindly furnished.

[4] These claims are only recently recognised, and by no means adequately in English education.

16. *The curricula in Swedish Secondary Schools.*—Some idea of the curricula of the Swedish schoo s can be had from the following table, compiled from the official publications of some Stockholm schools.[1]

Curriculum of the Södermalm Higher State School, 1901–2.

Subjects.	Classes and Hours per Week.						
	I.	II.	III.	IV. R, RL, L.	V. R, RL.	VI A, B. R, L.	VII A, B. R, L.
Religion	3	3	3	2	2	2	2
Swedish	5	5	6	4	3	2	2
Latin	..	...	...	0, 7, 7	0, 7	0, 6	0, 7
Greek	...	...	...	...	...	0, 6	0, 6
German	6	7	6	4	3	1	1
English	...	...	...	6, 6, 0	6, 6	3	3, 2
French	...	...	...	...	3, 3	4	4, 1
History	2	3	3	3	3, 3	} 3	} 3
Geography	2	2	3	1	1, 1	}	}
Mathematics	4	5	5	5	4, 4	6, 1	7, 2
Natural Science	2	2	2	3	2 2 / 1 1 / 3	1 1 / 2 1 / 2	1 1 / 3 2 / 2
Phil. Propæd.	...	...	...	...	...	...	1
Totals	24	27	28	28, 35, 29	31, 35	26, 30	29, 30

The classes VI A and VI B, and VII A and VII B, are different classes, and each have a Real and a Latin side.

The total hours are not absolutely correct, for there are singing, gymnastics, etc., to be included. The actual hours, *excluding* singing, gymnastics, etc., are about 27 in the first class, and about 30 to 32 in the others. In the natural science the smaller figures represent natural history, physics, and chemistry.

The curricula are not absolutely identical in different schools, as the following will shew[2]:—

Curriculum of the Norrmalm Higher State School, 1902.

Subjects.	Classes and hours per Week.							
	I	II	III	IV[3] R, L.	V R, L.	VI A, B (a), (b)	VIIA, B (a), (b)	Totals.
Religion	3	3	3	2	2	2	2	17
Swedish	5	5	6	4	3	2	2	27
German	6	7	6	4	3	1, 2	1, 2	...
English	...	...	...	6, 0	6, 0	3	2[4]	...
French	...	...	...	...	3	4	4, 3	...
Latin	...	...	...	0, 7	0, 7	6	7	...
Greek	...	...	...	...	...	6	6	...
History	2	3	3	3	3	3	3	...
Geography	2	2	3	1	1	4, 3	...	...
Propaedeutics	...	...	...	...	...	...	1	...
Mathematics	4	5	5	5	4	4, 3	5, 3	...
Natural History	2	2	2	3	3	2, 1	3, 2	...
Totals	24	27	28	28, 29	28, 29	37, 35	36, 33	...

Outside the programme there is obligatory instruction in *singing*, two hours per week at most; in *gymnastics*, at least three hours, preferably a half-hour each day; in military exercises. There are also optional subjects of instruction; as for example, English for the two highest classes of the Latin division. The pupils of the four highest classes, VI A, B, and VII A, B have *military exercises* during five weeks at the most, at the commencement of the autumn semester. The total is about sixty hours.

It may be mentioned that the school year commences at the end of August, and is nominally of thirty-six or really of thirty-four and a half weeks duration. It is divided into two semesters, viz., autumn and spring, lasting sixteen and twenty weeks respectively. A week's holiday at Easter, and a half week at Whitsuntide reduce the actual time to thirty-four and a half weeks as mentioned.

The actual school year is thus shorter in Sweden than in other countries of Europe—for example: Sweden, 34½; Norway, 38½; France, 41; Austria, 42; Prussia, 42; Denmark, 43.

During recent years, however, the pupils have certain *obligatory* duties during their vacations, under a definitely-organised system.

17. *Distribution of the subjects.*—The best indication of the distribution of the time devoted to the various subjects is the time-table. The following is that of Södermalms Higher State School.

Time

[1] Inbjudning till öfvervarande af årsexamen vid högre allmänna läroverket å Södermalm och Katarina lägre allmänna läroverk, Vaterminen 1902, af Carl von Friesen. Stockholm, 1902.

[2] Compiled from the information in official report. (Inbjudning till öfvervarande af årsexamena vid högre Latin läroverket å Norrmalm, etc., af Card Lundberg.) Stockholm, 1902.

[3] At the fourth class a break is made.

[4] Optional for the (b) line.

Time-table Södermalms Higher State School—Scholastic Year, 1902–3[1].

	L. 7:2.	R. 7:2.	L. 7:1.	R. 7:1a.	R. 7:1b.	L. 6:2.	R. 6:2a.	R. 6:2b.	L. 6:1.	R. 6:1a.	R. 6:1b.	L. 5.	L. and R. 5.	R. 5.	L. and R. 4.	R. 4a.	R. 4b.	3a.	3b.	3c.	2a.	2b.	2c.	1a.	1b.
Monday—																									
8–9	Gr. | Mth.	Phys.	Rel.	Rel.	Nat.H.	His. Ge.	Fr.	Eng.	Lat.	Writ.	Writ.	Lat.	Lat. | Eng.	Math.	Math.	Ger.	Eng.	Draw.	Ger.	Swed.	Ger.	Ger.	Ger.	Hist.	Hist.
9–10	Gr. | Nat. H.	Math.	Ger. | Draw.	Draw.	Ger.	Phys.	Fr.	Eng.	Rel.	Writ.	Writ.	Lat.	Lat. | Eng.	Rel.	Math.	Ger.	Eng.	Hist.	Ger.	Geog.	Ger.	Ger.	Math.	Calig.	Math.
10–11	Lat.	Math.	Hist.	Nat.H.	Chem.	Gr. | Mth.	Rel.	Draw.	Gr. | Eng.	Writ.	Writ.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	... ..	.....
12–1	.....	.....	.....	.....	... ..	... ..	.....	.....	.....	.....	.....	Math.	Math.	Fr.	Hist. | Hist.	Eng.	Nat. Sc.	Swed.	Swed.	Hist.	Rel.	Hist.	Math.	Ger.	Nat.Sc.
1–2	His. Ge.	Phil.	Lat.	Math.	Math.	Lat.	Math.	Fr.	Fr.	Fr.	Fr.	Math.	Bot. Zo.	Eng.	Ger.	Math.	Swed.	Swed.	Math.	Math.	Swed.	Geog.	Swed.	Ger.	Rel.
2–3	Swed.	His.Ge.	Lat.	Math.	Math.	Lat.	Math.	His.Ge.	Fr.	Fr.	Fr.	Bot.Zo.	Swed.	Eng,	Rel.	Math.	Swed.	Ger.	Math.	Math.	Swed.	Rel.	Calig.	Swed.	.....
3–4	.....	.....	... ..	.....	.....	.....	.....	.....	.....	Math.	His.Ge.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tuesday—																									
8–9	Math.	Rel.	Phil.	Chem.	Fr.	Rel.	Phys.	Math.	Math.	His.Ge.	Math.	Hist.	Fr.	Draw.	Nat. Sc.	Swed.	Ger.	Math.	Rel.	Rel.	Nat.Sc.	Math.	Math.	Geog.	Ger.
9–10	Phys.	Chem.	Swed.	His.Ge.	Fr.	His Ge.	Nat.H.	Math.	Math.	Fr.	Swed.	Draw.	Rel.	Hist.	Hist. | Hist.	Swed.	Eng.	Math.	Nat.Sc.	Math,	Hist.	Ger.	Calig.	Draw.	Ger.
10–11	Rel.	Math.	Phys.	Swed.	His.Ge.	Gr. | Nat. H.	Swed.	Fr.	Ger. | Draw.	Swed.	Ger.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
12–1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Fr.	Ger.	Bot. Zo.	Ger.	Eng.	Draw.	Geog.	Hist.	Geog.	Math.	Draw.	Hist.	Math.	Nat.Sc.
1–2	Lat.	Eng.	Gr. | Fr.	Fr.	Eng.	Swed.	His.Ge.	Rel.	Lat.	Math.	Eng.	Swed.	Hist. | Eng.	Ger.	Draw.	Nat. Sc.	Math.	Nat.Sc.	Hist.	Ger.	Math.	Swed.	Draw.	Math.	Swed.
2–3	Lat.	Swed.	Gr. | Eng.	Fr.	Phys.	Ger. | Draw.	Draw.	His.Ge.	Lat.	Math.	His.Ge.	Rel.	Hist. | Eng.	Ger.	Swed.	Hist.	Rel.	Rel.	Ger.	Ger.	Draw.	Swed.	Nat.Sc.	Nat.Sc.	Swed.
3–4	.....	.....	.....	.....	.....	Math.	.....	.....	Swed.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	... ..	.....	.....	.....	.....
Wednesday—																									
8–9	Gr. | Eng.	Phys.	Math.	Rel.	Rel.	Swed.	Fr.	Eng.	Writ.	Chem.	Math.	Lat.	Lat. | Draw.	Swed.	Math.	Ger.	Hist.	Swed.	Rel.	Swed.	Ger.	Ger.	Math.	Ger.	Swed.
9–10	Gr. | Draw.	Draw.	Ger.	Math.	Math.	Lat.	Phys.	Math.	Writ.	Nat. H	Math.	Lat.	Lat. | Eng.	Geog.	Geog.	Rel.	Eng.	Swed.	Geog.	Swed.	Math.	Ger.	Rel.	Rel.	Calig.
10–11	Swed.	Nat. H.	Gr. | Mth.	Phys.	Draw.	Fr.	Draw.	Math.	Writ.	Rel.	Chem.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
12–1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Hist.	Bot. Zo.	Eng.	Hist. | Hist.	Eng.	Draw.	Ger.	Swed.	Ger.	Math.	Swed.	Ger.	Math.	Ger.
1–2	His. Ge.	Ger.	Lat.	Eng.	Phys.	Gr. | Eng.	Math.	Chem.	His. Ge.	Eng.	Fr.	Hist.	Hist. | Hist.	Eng.	Lat. | Eng.	Swed.	Swed.	Ger.	Draw.	Nat.Sc.	Swed.	Hist.	Ger.	Swed.	Ger.
2–3	Phil.	His.Ge.	Lat.	Ger.	His.Ge.	Gr. | Eng.	Math.	Nat. H.	Fr.	Draw.	Fr.	Math.	Swed.	Ger.	Lat. | Eng.	Math.	Math.	Math.	Math.	Calig.	Swed.	Hist.	Swed.	.....	.....
3–4	.....	.....	.....	.....	Fr.	Math.	.....	Draw.	Phys.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Thursday—																									
8–9	Rel.	Math.	Lat.	Math.	Chem.	Rel.	Writ.	Writ.	Gr. | Draw.	His.Ge.	Nat. H.	Ger.	Math.	Fr.	Lat. | Eng.	Bot. Zo.	Math.	Math.	Math.	Ger.	Ger.	Math.	Geog.	Hist.	Calig.
9–10	Fr.	Math.	Math.	Math.	Phil.	His. Ge.	Writ.	Writ.	Gr. | Mth.	Ger.	Phys.	Math.	Math.	Hist.	Lat. | Eng.	Draw.	Ger.	Swed.	Swed.	Swed.	Ger.	Nat.Sc.	Rel.	Rel.	Rel.
10–11	Fr.	Phys.	Math.	Draw.	Swed.	Lat.	Writ.	Writ.	Fr.	Rel.	Math.	... ..	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	... ..	.....
12–1	.....	.....	.....	.....	.....	.....	.....	... ..	.....	... ..	.....	Nat.Sc.	Geog.	Swed.	Swed.	Eng.	Hist.	Hist.	Rel.	Hist.	Rel.	Swed.	Hist.	Nat.Sc.	Swed.
1–2	Lat.	Fr.	Gr. | Nat. H.	His.Ge.	Math.	Fr.	Eng.	Rel.	His. Ge.	Phys.	Swed.	Swed.	Fr.	Math.	Swed.	Hist.	Eng.	Nat.Sc.	Swed.	Rel.	Geog.	Rel.	Ger.	.....	Swed,
2–3	Lat.	Swed.	Gr. | Eng.	Fr.	Math.	Math.	Eng.	Swed.	Rel.	Math.	Rel.	Geog.	Fr	Math.	Ger.	Geog.	Eng.	Geog.	Swed.	Geog.	Calig.	Calig.	Ger.	.....	.....
3–4	Math.	.....	.....	Phys.	.....	.....	Swed.	.....	... ..	.....	.....	.....	.....	.....	.....	.....	.....	.....	... ..	.....	.....	.....	.....	.....	.....
Friday—																									
8–9	Gr. | Mth.	Eng.	Fr.	Chem.	Draw.	Writ.	His.Ge.	Phys.	Lat.	Math.	Math.	Ger.	Lat. | Hist.	Swed.	Lat. | Eng.	Swed.	Math.	Rel.	Ger.	Math.	Hist.	Geog.	Ger.	Ger.	Geog.
9–10	Gr. | Eng.	Eng.	His. Ge.	Math.	Rel.	Writ.	Chem.	Math.	Lat.	Draw.	Math.	Fr.	Lat. | Hist.	Rel.	Lat. | Eng.	Rel.	Math.	Hist.	Ger.	Math.	Math.	Calig.	Geog.	Ger.	Hist.
10–11	Fr.	Draw.	Swed.	Math.	Math.	Writ.	Rel.	Math.	Gr. | Nat. H.	Fr.	Chem.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
12–1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Lat.	Ger.	Draw.	Nat. Sc.	Eng.	Bot.Zo.	Ger.	Hist.	Hist.	Swe.l.	Math.	Math.	Geog.	Math.
1–2	His. Ge.	Rel.	Lat.	Fr.	Phys.	Gr. | Eng.	Math.	Ger.	His. Ge.	Chem.	Draw.	Lat.	Ger.	Nat. Sc.	Bot. Zo.	Ger.	Swed.	Calig.	Swed.	Ger.	Ger.	Math.	Swed.	Rel.	Ger.
2–3	Ger.	Fr.	Lat.	Swed.	Swed.	Gr. | Draw.	Draw.	Chem.	Swed.	Eng.	His.Ge.	Rel.	Math.	Fr.	Swed.	Hist.	Swed.	Swed.	Nat.Sc.	Ger.	Swed.	Hist.	Swed.	Swed.
3–4	.....	His.Ge.	.....	.....	.....	.....	Draw.	.....	.....	Eng.	Phys.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Saturday—																									
8–9	Math.	Math.	Rel.	Phys.	His.Ge.	Ger.	Fr.	Fr.	Gr. | Eng.	Swed.	Draw.	Bot.Zo.	Rel.	Eng.	Swed.	Math.	Geog.	Geog.	Ger.	Swed.	Rel.	Nat.Sc.	Rel.	Swed.	Math.
9–10	Phys.	Math.	His. Ge.	Phil.	Fr.	Fr.	Chem.	Fr.	Gr. | Eng.	Math.	Draw.	Ger.	Swed.	Eng.	Rel.	Math.	Hist.	Rel.	Nat.Sc.	Rel.	Geog.	Rel.	Nat.Sc.	Swed.	Draw.
10–11	Gr. | Fr.	Chem.	Gr. | Mth.	His.Ge.	Math.	Fr.	Eng.	Phys.	Lat.	Draw.	Rel.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
12–1	.....	.....	.....	.....	... ..	... ..	.....	.....	.....	.....	.....	Fr.	Nat. Sc.	Bot. Zo.	Lat. | Draw.	Eng.	Ger.	Ger.	Geog.	Draw.	Hist.	Math.	Ger.	Ger.	Geog.
1–2	Lat.	Fr.	Fr.	Eng.	Eng.	L t.	His.Ge.	Swed.	Ger.	Phys.	Eng.	Lat.	Draw.	Hist.	Math.	Nat. Sc.	Geog.	Ger.	Ger.	Nat.Sc	Ger.	Swed.	Calig.	Rel.
2–3	Lat.	Fr.	Fr.	Eng.	Eng.	Lat.	Math.	His.Ge.	Math.	His.Ge.	Eng.	Swed.	Lat. | Eng.	Math.	Math.	Draw.	Rel.	Math.	Swed.	Calig.	Ger.	Swed.	Math.	Ger.
3–4	.....	.....	Phys.	.....	.....	.....	.....	Draw.	.....	.....	.....	.....	... ..	.....	.....	.....	.....	.....	.....	.....	.....	.....	... ..	.....

[1] Läsordning vid Södermalms Högre Allmänna Läroverk läsaret, 1902–3.

A reference to one or two subjects will perhaps be sufficient.

In *Mathematics*, arithmetic includes, in Classes I to III, the four operations—ordinary and decimal fractions, proportion, interest, the theory of fractions, mental arithmetic. In Class IV, planimetric and stereometric computations are undertaken. Euclid, Books I–IV, are completed in the fifth class, and in that class algebra only as equations of the first degree.

In Class V, the theory of fractions is extended and concluded. In Class VI (A), square root, the theory of proportion, equations of the first and second degree, are solved. In Class VI (B), systems of equations with several unknowns, logarithms, series. In Class VII (A), applications of the theory of series to questions of compound interest, etc., are taken; plane trigonometry, stereometry, and analytical geometry are commenced, and are further developed and recapitulated in Class VII (B), the highest.

Geometry is taught by the intuitional method at first, then simple propositions and their application; later trigonometry, planimetry, stereometry, and analytical geometry.

In *Natural Science*, the instruction embraces zoology, with some reference to anthropology, botany, general natural history, physics, and in the "Real" line, also chemistry. The work is treated about as follows:—

In *Zoology*—

Class I. General introduction to the animal kingdom, and the very elementary theory of the structure of the human body, and of typical mammals.

Class II. Sketch of the mammalia; general sketch of birds, several being treated in detail as types.

Class III. Recapitulation; typical cold-blooded vertebrates; the invertebrates.

In Class V, there is a general recapitulation. In Classes VI and VII, the structure of the human body is discussed in relation to hygiene; comparative anatomy.

In *Botany*, the instruction runs about as follows:—

Class II. A living plant is selected in order to illustrate the theory of the external organs of the plant; excursions are made and plants are collected and described.

Class III. Living plants are examined, and exercises are given in the determination of plants from their flora; further excursions are made.

In Class VI, the more important families of phanerogamic plants are treated from the standpoint of morphology, from that of biology, and also from that of their significance for the human race.

In Class VII (A), a review of the larger group of cryptogamic plants, and of their significance for mankind, is the subject matter of the instruction.

In Class VII (B), the more important parts of the theory of the inner structure and physiological processes of plants is taken, and there is a general recapitulation.

In each class, as far as VI (B), about fifty plants are described.

The instruction in *Natural History* comprises, in Class IV, the ordinary physical phænomena, the chief bodies of our planetary system, and of the celestial regions.

Class V, ordinary chemical phænomena, the elements of the theory of the earth's form, crust, surface, &c.

Systematic instruction in physics commence in Class VI (A); in the Latin line, general properties of matter. In Class VI (B), general properties of fluids and gases; Class VII (A), heat, magnetism, and electricity; Class VII (B), sound and light and repetition. On the "Real" line the teaching is much the same, except that it is more highly developed.

Systematic instruction in *Chemistry* is given only on the "Real" line, general introduction and some of the metalloids being considered in Class VI (A); the metalloids and some of the light metals in Class VI (B); and in Class VII (A) the heavy metals. In Class VII (B) the first elements of mineralogy and geology are taken.

18. *Instruction in Gymnastics.*—The gymnastic instruction includes pædagogical gymnastics, fencing, and military exercises. For the *pædagogical gymnastics*, the pupils are usually divided into three divisions, usually without regard to classes, but according to age, physical development and health. In some cases, even minor divisions are created whenever the physical weakness of the pupils indicates it as desirable. The gymnastic instruction is considered to be outside the ordinary school-hours. Pædagogical gymnastics usually occupies a half-hour a day, but may be varied according to circumstances. The teachers are all educated in the Central Institute in Stockholm, the Ling system being followed. Its aim is the uniform harmonious development of the body, and considerable importance is attached to scientifically designed free-standing exercises. In Classes VI and VII, two hours a week are devoted to fencing and sabre exercises. Military exercises for Classes VI and VII embrace general instruction, drill, military evolutions, and rifle practice.

The gymnastic exercises, seen by the Commissioners, were well executed, and in the Central Institute in Stockholm those receiving professional education in gymnastics showed a precision of movement which probably is unexcelled.

19. *General Remarks.*—The following notes were made during the visit to to the Södermalms Higher State School. This school is designed so that the class-room can hold as a maximum 35 pupils, but the Director prefers to have not more than 28 in the class. The whole school contains 666 scholars, out of which only 38 take Greek. The home-work of the pupils ranged from 1½ to 3 hours, according to their age. The higher grade teachers teach from about 20 to 21 hours, and the lower grade about 26 hours.

This type of school charges half fees to the poorer scholars, the full fees being £2 2s. 3d. per annum.

The *Physics Laboratory* has a 1-horse power gas motor, a 60 volt 8 ampère dynamo, and physical apparatus. The *Chemical Laboratory* is equipped for practical experiments. The *Mineralogical Museum* has a small but excellent collection.

The schools are well heated, lighted, and ventilated, and are exceedingly fine buildings.

20. *Conclusion.*—The recently-built schools of Sweden are not only very handsome buildings, but are in the front rank of well-designed school buildings, and are very finely equipped.

The *Scientific Teaching* in the schools of Northern Europe has the general merit of continental teaching, and is strikingly in advance of what is to be seen in the average English school of the same character.

The characteristic difference between education in Denmark, Finland, Norway and Sweden, and in Southern Europe is that Greek and Latin, especially the *former*, are regarded as having no *special* claims on a student's attention. When, however, they are studied, they are studied thoroughly.

Teachers are properly trained in training schools before they are allowed to teach, and the traditions in regard to this are much the same as in other countries of Europe.

The educational scheme is well articulated, but is less rigid than in Austria, France, or Germany The secondary school confers what is practically the Bachelor degree, as in France, Germany, etc.

Physical development is regarded as important.

CHAPTER XXIX.

CHAPTER XXIX.

Scientific Equipment in Secondary Schools.

[G. H. KNIBBS.]

1. *Introductory.*—The efficiency and reach of higher education depends very largely on the thoroughness of the antecedent preparation. For this reason, studies in Universities and similar institutions have for a long time past been preceded by some form of Matriculation—at least for the graduate or systematic courses. This preliminary preparation is supposed to guarantee that the student presenting himself is qualified to receive the advantages and benefits which attendance for lectures and laboratory practice, or other courses of instruction, may be expected to confer. Initially, the preparation embraced only the humanities, and a certain amount of acquaintance with ancient authors was deemed essential by way of preparation. If, however, propædeutical studies are necessary for the advanced study of languages, and for the study of literature, history, and philosophy, they certainly are also necessary for the advanced learning of science. The University, or any other institution providing the highest grade of instruction, if it is to fulfil its highest and proper function, must at least be above the necessity of discussing the mere elements of science—these must be acquired in the preparatory schools; and it is only in so far as these elements are acquired, that the University can achieve its end.

Secondary schools, therefore, in all countries which possess good educational systems, invariably ground their pupils in the elements of what may be called the fundamental sciences, viz., those which will be studied afterwards at the University, etc., and which are necessary to general culture. To do this it is essential that the schools be provided with *apparatus*, and in Europe one *never* sees secondary schools without cabinets for natural history, physics, chemistry, etc. This chapter will deal with the question of such equipment, and should be read in connection with Chapters L and LI of the Interim Report, pp. 448–456, *on the Educational equipment of schools*, and also in connection with Chapter XXVI, pp. 255–265, treating of Natural Science in the *primary schools*.

2. *The necessity of Scientific Equipment in secondary schools.*—Recent changes in English education imply a distinct recognition of the national importance and necessity of systematic science teaching during school-life. This is very marked in some of the more progressive schools. It is true that English Board schools do not compare favourably with the popular schools of Switzerland, and many other countries of Europe, in regard, for example, to general design, to the lighting and seating arrangements, to ventilating and heating, or to the equipment in personnel and material. The training of the European teacher is more thorough; his school and its material give him a better opportunity. While this is true, it is also true that a change is rapidly being brought about. Even the primary teacher is now required in England to work in the chemical and physical laboratories during the time he is receiving his professional training; and although the training colleges are not fully equipped in respect of their scientific libraries, they are sufficiently equipped for *real* work to be done—they are not mere make-believes.

To give reality to teaching in science, and to stimulate the pupils to both observe and think for themselves, it is necessary to make actual experiments during the lessons, and in certain cases, to have experiments progressing during the pupil's career in the schools.[1] This is done, as has been shewn in the Interim Report, even in the primary schools of Europe, and truly scientific teaching is becoming an integral part of the curriculum. This, of course, is necessarily of a very elementary nature; but it is a suitable and indeed excellent preparation for the higher school, just as the latter is for the highest, viz., the University.

It is thus obvious that, if the work begun in the elementary and preparatory schools is to be carried on to a higher stage, viz., to one which better fulfils our scientific necessities and cultural requirements, *the scientific equipment must be more elaborate and the teaching more methodical in the secondary schools.*

The three stages of development in education may be called the observational, the reflectional, and the creational. Each contributes its quota to human progress. But these stages are not absolutely successive; for, while in the main they mark the progress of development, they are to a no less important extent contemporaneous: and they should be so. Again, in so far as they *are* successive, they repeat themselves in individual experience, each time touching a higher plane. Hence, science teaching, which in the earlier stages concerns itself mainly with natural objects and demands a minimum quantity of apparatus, requires an increasingly extensive amount as its more abstract and general truths are reached.

A word or two may be said on the impression left on the Commissioner's mind by a comparison of our secondary schools with those of European countries. One can only feel *humiliated.* With the great interests at stake, the pressing importance of availing ourselves of all the aids that the scientific habit of mind and scientific information can confer, we yet neglect science in the majority of our higher schools and colleges; or, where we do *not* neglect it, it is humiliatingly poor as compared with the teaching characteristic of Europe.

To refer to the equipment in the secondary schools of all the countries of Europe is unnecessary. It must suffice, therefore, to take one or two instances, after giving a general idea.

3.

[1] An example of the latter would be the growth of plants under special conditions, or any process or change which takes place but slowly.

3. *General Outline of Equipment.*—The complete equipment of a secondary school is constituted, approximately, as follows hereinafter, viz. :—

For general culture, mother-tongue, ancient and modern languages, text-books on various subjects.	(1) General Library. (2) Teachers' Library. (3) Pupils' Library.

Sometimes (1) and (2) are combined, and generally the resources of (1) are available, with some limitations, for (3).

For Botany and Zoology and Natural History generally.	(1) Charts and diagrams. (2) Models. (3) Stuffed animals. (4) Collections of insecta. (5) Dissected animals. (6) Microscopic preparations.

Structural and Morphological Botany (Organography) are illustrated by diagrams, some of which are *excellent*, and by models, etc. *Physiological Botany* (Organology) and *Systematic Botany* are similarly illustrated. In some cases a considerable *Herbarium* is a further assistance. The diagrams are designed to bring into relief not only the general classification but also typical instances. For example, in illustrating inflorescence, each important type of indefinite centripetal, definite centrifugal, and mixed inflorescence is ordinarily to be found; and in fruits the important examples of monogynœcial and of polygynœcial fruits, and so on. Botanical excursions are also made.

The important Mammalia are fairly well represented in the school museum; so also are Aves. Amphibia, and Pisces are usually less well, though sufficiently, represented. The Insecta are frequently well represented, considerable collections of Coleoptera and Lepidoptera being by no means unusual. Vermes are satisfactorily represented. Conchology is not very elaborately developed, so far as the cabinets seen were concerned.

The natural forms of the animals are carefully preserved by the taxidermist. Some minor ones are dissected on one side of the body, the veins and arteries being injected. Preservation in alcohol, glycerine, and formaldehyde solution is common. In some instances the animal is on a glass plate with glass cover forming a segment of a sphere. The collections usually take up the whole of a room of considerable size, and are usually kept in perfect order.

The diagrams are usually exposed during the whole time that the lessons are covering a particular range.

For Natural Philosophy, Mathematical and Physical Sciences.	Mathematics	Apparatus. Models.
	Physics	Apparatus. Diagrams. Laboratory.
	Chemistry	Apparatus. Chemicals, Reagents. Laboratory.
	Geology	Charts. Collections of Rocks and Fossils.
	Mineralogy	Crystallographic models. Collections of Minerals.
	Cosmography	Diagrams. Tellurium, etc. Apparatus.

The science teaching differentiates as it progresses. The different sciences are deliberately kept as much as possible in association in the earlier stages of teaching, so that the pupils grow up with at least an unconscious recognition of what may be called the natural unity of science.

For the teaching of *Mathematics*, one finds, in addition to diagrams illustrating intuitional, plane, solid, descriptive geometry, and perspective, models of sheaves of lines, of pencils, intersecting surfaces, solid forms, etc.

For the teaching of *Physics* the apparatus usually found illustrates the subjects—kinematics, mechanics, the properties of matter, sound, heat, light, magnetism, electricity, etc. In a great many towns of Europe the current from the electric rail and tramways, or the electric lighting service, is available in the secondary schools for experiments. All the elementary experiments in the different branches of physics can be undertaken. One sees, for example, apparatus for the demonstration of wireless telegraphy, electric waves, etc., Röntgen radiations, and similar modern discoveries.

Diagrams represent the principles of mechanics, etc. The quantity of apparatus is often very considerable. The laboratory for physics and that for chemistry are sometimes combined.

For the teaching of *Chemistry* the secondary schools have chemical laboratories with sets of reagents, benches, sinks, and the usual apparatus for inorganic and organic chemistry, draught-chambers, etc. Students analyse, make preparations, etc., and become familiar with all the principal processes of chemical manipulation.

For the teaching of *Geology* the cabinets contain specimens of all the important rocks and typical fossils. The schools are supplied with geological maps, and charts shewing sections, and illustrating palæontological botany and zoology, so that the pupils can readily become acquainted with the fauna and flora of each geologic period. Reliefs and coloured sections are to be found in some instances.

For illustrating *Mineralogy*, models and charts, shewing the different crystallographic systems, are to be found in the schools; so also are cabinets of mineral specimens. In some of the secondary schools, especially near mining centres, these are exceptionally fine. In addition to opaque models, wire and cord and glass crystal-models are common.

For the teaching of *Cosmography* the usual equipment is a set of celestial charts, shewing the solar system and its members, the comets, the stellar system, typical types of star-spectra, etc. A Planetarium and Tellurium, and other apparatus illustrating terrestrial motion (*e.g.*, a gyroscope), are usual if not invariable.

For

For the teaching of *Geography* the usual series of maps are provided, and special maps and reliefs for the teaching of physical geography, meteorology, etc. In connection with subjects like these, charts of the monuments of antiquity and characteristic views of the present time are common. They illustrate ethnography, industrial and commercial production, etc.

For *General Information*, the projection lantern is called into requisition, and special collections of commercial and industrial products are often to be found in museums of the schools. There is always some degree of individualism in the collections of apparatus and scientific material, and the teachers are usually sufficiently interested in their special subjects to make contributions of value from time to time.

4. *Magnitude of the Libraries, collections of scientific apparatus, etc.*—The magnitude of the libraries is very variable. In some of the older gymnasia one might find 70,000 volumes, whereas recent ones have no such wealth of literature; but *all are lavishly provided for* in comparison with anything to which we are accustomed in Australia. The same remark applies to the apparatus and specimen cabinets for teaching the various sciences. Nothing in any of our secondary schools is in any way comparable thereto. Science cannot be well studied with us; whereas, every pupil completing the course in a Real-gymnasium or Oberrealschule, or the corresponding courses in a Lycée, has become familiar with the elements of the sciences, has seen the real objects, has witnessed the experiments, and so on.

The equipment is more of the order that we associate in our minds with University teaching, than with the teaching of secondary schools. In order to give an idea of its significance an illustration may be drawn from two or three countries.

5. *Equipment of Gymnasia in Hungary.*—The central Government placed in the public secondary schools of Hungary highly qualified teachers who were educated abroad, and in reorganising the schools these teachers founded the splendid cabinets of natural history and of physics and chemistry. The example set by the public schools was quickly and eagerly followed by the confessional, denominational, and other schools, the consequence being that Hungarian gymnasia are thoroughly well equipped for science-teaching. The collections of the secondary schools, excluding books, of course, and the paraphernalia of libraries, include it is said about 2,505,000 objects, made up as follows:—

Collections of Natural History	1,708,000 objects.
Physical apparatus	77,000 pieces.
Chemical apparatus	83,000 „
Collections connected with geography, history, and philology ...	375,000 „
Drawing	217,000 „
Gymnastics, etc.	45,000 „

This is for 194 secondary schools, and will give some idea of the wealth of the equipment for science-teaching. *There are schools in Hungary where the number of specimens in the natural history collections total* 60,000, *and the collections of minerals, etc., are exceptionaly fine.* The mountainous country and mines contribute largely to the latter.

The philological and historical collections are more recent than the others. Literature and history are taught with their aid, and in reading the classics, illustrations of ancient art, etc., are largely used. Maps, prints, photographs, plaster, and terra cotta casts, reliefs, etc., are all pressed into service, and *by ministerial decree this equipment is to be yearly added to.*

Every school has its models for drawing lessons. Until recently the maps used in Hungarian schools were produced in foreign lands, but to-day they are furnished by the "Geographical Institute," which is subsidised by the State.

The libraries of the Hungarian schools are also a feature worth mentioning. The following list will give some idea of their wealth in books:—

Reformed College of Debreczen	68,000 volumes.
„ „ „ Sárospatak	52,000 „
Evangelical Lyceum of Pozsony	39,000 „
„ „ „ Késmárk	36,000 „
„ „ „ Brassó	27,000 „
Higher Unitarian School of Kolozsvár	26,000 „
Reformed College of Nagy-Enyd	25,000 „
Evangelical Lyceum of Eperjes	24,000 „
Catholic Gymnasium of Arad	18,000 „
„ „ „ Nagy-Szombat	16,000 „

While the more recently founded Gymnasia, Real-schools, etc., are less rich, they contain all the more important recent works. In the whole of the secondary schools there are—1,220,000 scientific works; 139,000 volumes of reviews; 409,000 miscellaneous; total, 1,768,000.

In every secondary school in Hungary there is a library for the use of pupils. In these are the classic text-books and manuals *for the use of the poorer pupils.* The body of their libraries is made up of literary and scientific works, the master-pieces of the great authors, both national and foreign, narratives, travels, popular books, etc.

The libraries are under the supervision of the teachers, who once or twice a week lend out the books to the pupils. On entering the classes the pupils pay from, say, 1s. to 2s. each for their support; and it may be stated that the libraries are very popular, and their educational value is much appreciated. They comprise altogether 58,000 text-books and classic works, and 322,000 volumes for general reading; total, 380,000.

The Minister of Public Instruction of Hungary has published a catalogue indicating in detail the apparatus, etc., needed in a secondary school, and the great majority of the schools are now provided accordingly.

If we compare this state of things with that prevailing in the Commonwealth, we shall understand where we are, educationally.

6. *Equipment for Teaching in a German Gymnasium.*—Some conception of the equipments of a German Gymnasium can be had from the following extract from the yearly "*Bericht*" of the Kaiser Friedrich-Schule of Charlottenburg, a suburb of Berlin.[1] The extract refers to the Library, the natural history, physical and chemical equipments. The details are given much as they stand in the report. They serve to give a detailed idea of the quality and extent of the equipment of a secondary school, and to amplify the general description previously given.

7. *The Teacher's Library, Kaiser Friedrich Schule, Charlottenburg.*—The following works are reported as having been purchased,[2] viz.:—

School-books.—Lackowitz, Flora von Berlin und der Provinz Brandenburg. Homer, Odyssee (Hubatsch). Homer, Ilias (Kern). Ovid, Metamorphosen. Hope, Stories of English Schoolboy-Life. Dubislav u. Boek, Schulgrammatik der englischen Sprache. Bruno, Francinet. Gropp und Hausknecht, Auswahl französischer Gedichte. Wossidlo, Leitfaden der Zoologie, 2nd Pt., der Mensch. Chambers, English History, nebst Wörterbuch. Dubislav und Boek, Uebungsbuch zum Uebersetzen aus dem Deutschen in das Englische. Sarcey, Le siège de Paris, nebst Wörterbuch. Scott, Tales of a Grandfather. Ségur, Histoire de Napoléon et de la grande armée en 1812, nebst Wörterbuch. Michaud, Histoire des Croisades, nebst Wörterbuch, Pt. I. Desgl., Pt. II. Duruy, Biographies d'hommes célèbres des temps anciens et modernes Erckmann-Chatrian, Histoire d'un conscrit de 1813. Lamé-Fleury, Historie de la découverte de l'Amérique. Burnett, Little Lord Fauntleroy. Duruy, Histoire de France de 1560–1643. Ostermann, Lateinisches Uebungsbuch. Cæsar, De bello Gallico; Schmeil, Lehrbuch der Zoologie für höhere Lehranstalten. Gesangbuch. Cicero, Briefe. Reinhardt, Lateinische Satzlehre. Plattner, Ausführliche Grammatik der französischen Sprache. Puritz, Merkbüchlein für Vorturner. Puritz. Handbüchlein turnerischer Ordnungs-, Frei-, Hantel- und Stab- übungen. Evangelisches Gesangbuch für die Provinz Brandenburg. Viehoff, Deutsches Lesebuch für die unteren Klassen höherer Lehranstalten. Dasselbe für mittlere Klassen. Treutlein, Vierstellige logarithmische und goniometrische Tafeln. Sumpf, Schul-Physik. Sumpf, Grundriss der Physik. Sumpf-Pieper, Mathematische Erdkunde. Ostermann, Lateinische Uebungsbücher. Putzger, Historischer Schulatlas zur alten, mittleren und neueren Geschichte. Das neue Testament nach der Uebersetzung Luthers. Perthes-Gillhausen, Lateinisch-deutsche vergleichende Wortkunde im Anschluss an Cæsar's Bellum Gallicum. Wulff, Lateinisches Lesebuch für den Anfangsunterricht reiferer Schüler. Wulff, Wortkunde zum Lateinischen Lesebuch. Wulff Uebungsbuch zum zum Uebersetzen aus dem Deutschen ins Lateinische. Ovid, Metamorphosen Homer, Odyssee im Auszuge v. Hubatsch. Günther u. Böhm, Rechenbuch für höhere Lehranstalten. Erk, Schulchoralbuch für die Provinz Brandenburg. Sering, Auswahl von Gesängen für Gymnasien und Realschulen. Sachs-Villatte, Französisch-Deutsches Schulwörterbuch. Sperber, Religionsbüchlein für die Unterstufe evangelischer Schulen. Sandt, Heimatkunde der Provinz Brandenburg. Unterrichtsstoff für die deutsche Grammatik und Orthographie. Schulze, Lehrstoff für den grammatischen und orthographischen Unterricht in der Vorschule. Tegge, Kompendium der griechischen und römischen Altertümer. Dreser, Englische Synonymik für die Oberklassen höherer Lehranstalten. Perthes-Gillhausen, Lateinisch-Deutsche Wortkunde zu Cæsars Bellum Gallicum. Treutlein, Vierstellige logarithmische und goniometrische Tafeln. Bruno, Francinet. August, Vollständige logarithmische und trigonometrische Tafeln. Ostermann-Müller, Lateinisches Uebungsbuch. Wilbrand, Leitfaden für den methodischen Unterricht in der Chemie. Wilbrand, Grundzüge der Chemie. Loew, Pflanzenkunde. Wossidlo, Leitfaden der Zoologie. Müller-Kutnewsky, Aufgabensammlung aus der Arithmethik, Trigonometrie und Stereometrie. Bötticher, Biblische Geschichten. Bibliotheca Gothana: Cæsar, De bello civili, Cæsar, De bello Gallico. Cicero, Epistolæ selectæ, Cicero, De imperio. Demosthenes, Die 3 olynthischen Reden und die erste Rede gegen Philippus. Herodotus, Lib. VIII. Livius, Lib. 21 and 30. Ovid, Metamorphosen I-V. Sophokles, A I A Σ. Sallust, De bello Jugurthino. Sophokles, Οιδίπους. Tacitus, Annales-Germania-Agricola. Vergil, I–II, X–XII und Kommentar. Xenophon, Hellenika-Anabasis. Cicero, De officiis; Pro Milone. Bötticher, Biblische Geschichten. Sieglin, Schulatlas zur alten Geschichte. Sumpf, Schulphysik. Schmeil Lehrbuch der Botanik, Lief, 1. Sperber, Religionsbüchlein für die Unterstufe evangelischer Schulen. Xenophon, Anabasis. Reinhardt, Griechische Formen- und Satzlehre. Herwig, Lese- und Uebungsbuch für den griechischen Anfangsunterricht. Kühn, Französisches Lesebuch v. Wilamowitz-Moellendorf, Griechisches Lesebuch. Ovid, Metamorphoses. Jochmann, Hermes und Spiess, Elementarphysik. Bork, die Elemente der Chemie und Mineralogie. Ebeling, Leitfaden der Chemie. Rohrbach, Vierstellige logarithmisch-trigonometrische Tafeln.

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[1] Bericht über das Schuljahr (1901-2). Charlottenburg, 1902, pp. 1–40. See pp. 24–35, Sammlung von Lehrmitteln.

[2] The translation into English has been thought unnecessary throughout. "Band" has been replaced by "Vol." and "Bände" by "Vols." Very often a wrong idea would be given by translation. For example, to translate "Helenens Kinderchen" by "Helen's Babies," might suggest that the work was in English, whereas it is in German: Hope, "Stories of English Schoolboy-Life," is in English; Sarcey, "Le Siège de Paris," is in French. Sophokles, "Οιδιπους" is in Greek; Cicero, "De officiis," is in Latin; and so on.

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Journals:—Hermes, Korrespondenzblatt für den akademisch gebildeten Lehrerstand. Centralblatt für die gesamte Unterrichtsverwaltung. Zeitschrift für Reform der höheren Schulen. Zeitschrift für lateinlose höhere Schulen. Zeitschrift für das Gymnasialwesen. Zeitschrift für den deutschen Unterricht. Zeitschrift für den evang. Religionsunterricht. Preussische Jahrbücher. Historische Zeitschrift Geographische Zeitschrift. Zeitschrift für den mathematischen und naturwissenschaftliche Unterricht. Zeitschrift für französische Sprache und Litteratur. Zeitschrift des allgemeinen deutschen Sprach-Vereins. Kunstwart. Türmer. Naturwissenschaftliche Rundschau. Zeitschrift für den physikalischen und chemischen Unterricht. Monatsschrift für höhere Schulen von R. Köpke und A. Matthias.

Presents received from Oberlehrer Dr. Klette:—Die neueren Sprachen, Bd. V und VI, from Consul Petersen: Chile, from Frau Justizrath Riesser: 6 Hefte Preussische Jahrbücher.

8. *The Students' Library, Kaiser Friedrich-Schule.*—For the students' library the purchases were: Marshall, Bilder-Atlas zur Zoologie der Säugetiere. Marshall, Bilder-Atlas zur Zoologie der Fische. Marshall, Die deutschen Meere und ihre Bewohner. Marshall, Bilder-Atlas zur Zoologie der Vögel. Marshall, Bilder-Atlas zur Zoologie der niederen Tiere. Geistbeck, Bilder-Atlas zur Geographie von Europa. Lavisse, Tu seras soldat. Magbert, Histoire véridique d'un vaurien. Robida, Moulin Fliquette. Delorme, Les petits cahiers de Mme. Brunet. Marchand, Tu seras agriculteur. Lamy, Voyage du Novice Jean Paul. Leroux et Montillot, Une famille. Blandy, Droit chemin. Varigny, Le Voyage du Matelot Jean Paul. Delorme, Les filles du Clown (Rita). Delorme, les filles du Clown (Tante Dorothée). Perrault. L'apprentie du capitaine. Malassez, Journées de deux petits Parisiens. Halt, Jacques la Chance et Jean la Guigne. Taschenberg, Was da kriecht und fliegt. Wörishöffer, Das Naturforscherschiff. Dielitz, Hellas und Rom. Dielitz, Land- und Seebilder. Jung, Leben und Sitten der Römer, Pt. I and II. Blümner, Leben und Sitten der Briechen, Pt. I, II, III. Grube, Geographische Charakterbilder, Pt. I, II, III. Grube, Biographische Miniaturbilder. Schmid, Chauvine, Geneviève de Brabant. Payot, Le bison noir. Payot, Dorette. Payot, Robinson Crusoe. Cooper, Le Tueur de Daims. Payot, Histoire de Guillaume Tell. Payot, Contes et légendes de la Suisse. Payot, La case d'oncle Tom. Münchgesang, Der ägyptische Königssohn. Lewes, Goethes Leben und Werke. Russ, Durch Feld und Wald. Grube, Bilder und Scenen aus Amerika. Grube, Bilder und Scenen aus Europa. Nettelbeck, Eine Lebensbeschreibung, von ihm selbst aufgezeichnet. Wildenbruch, Das edle Blut. Roscoe, Chemie. Geikie, Physikalische Geographie. Geikie, Geologie. Foster, Physiologie. Huxley, Allgemeine Einführung in die Naturwissenschaften. Heyer, Aus dem alten deutschen Reiche:—I. Kaiser Konrad II; II. Kaiser Heinrich III; III. Kaiser Heinrich IV; IV. Der erste Kreuzzug; V. Kaiser Heinrich V; VI. Die Hohenstaufischen Brüder; VII. Kaiser Friedrich I; VIII. Kaiser Heinrich VI; IX. Philipp von Schwaben; X. Kaiser Friedrich II; XI. Landmeister Hermann Balk; XII. Die letzten Hohenstaufen. Jungbrunnen, Der Bärenhäuter und die 7 Schwaben. Jungbrunnen, Deutsche Soldatenlieder. Jungbrunnen, Deutsche Soldatenlieder. Jungbrunnen, Königskinder. Jungbrunnen, Deutsche Wanderlieder. Hübner und Schwochow, Vom Kurhut bis zur Kaiserkrone. Rosegger, Als ich noch der Waldbauernbub war. Rosegger, Aus dem Walde. Russ, Meine Freunde. Weiland, Rulaman, Erzählung aus der Zeit des Höhlenmenschen und des Höhlenbaren. Rosegger, Waldjugend. Storm, Die Söhne des Senators. Klein, Fröschweiler Chronik v. 1870. Amicis, Herz, ein Buch für die Jugend. Stoll, Das 19 ten. Jahrhundert. Strom, Pole Poppenspäler. Rosegger, Waldferien. Freytag, Die Journalisten. Buckley, Das Feenreich der Wissenschaft. Tennyson, Enoch Arden. Chamisso, Schlemihls wundersame Geschichte. Scott, Quentin Durward. Kleist, Michael Kohlhaas. Petersen, Prinzessin Ilse. Stephen, Zum heiligen Kreuz. Hauff, Lichtenstein. Tegnér, Frithjofs-Sage. Hebbel, Die Nibelungen. Droste-Hülshoff, Die Judenbuche. Tiemann, Vor 25 Jahren, Feldzugserinnerungen. De la Motte Fouqué, Undine. Rosegger, Deutsches Geschichtenbuch für die Reifere Jugend. Dahn, Ein Kampf um Rom. Kahn, Sind Götter? Reinick, Märchen-, Lieder- und Geschichtenbuch. Wildenbruch, Vionville. Cervantes, Don Quichotte von La Mancha. Bulwer, Die letzten Tage von Pompeji. Dickens, Leben und Abenteuer Nicholas Nickleby. Andersen, Der Improvisator. Andersen, Bilderbuch ohne Bilder. Kleinschmidt, Die Befreiung Germaniens vom Römerjoche. Dickens, David Copperfield. Jordan, Nibelunge Siegfriedsage. Jordan, Nibelunge, Hildebrants Heimkehr. Alexis, Cabanis. Alexis Die Hosen des Herrn von Bredow. Mörike, Gedichte. Meerheim, Psychodramen. Alexis, Der falsche Waldemar. Alexis, Der Werwolf. Alexis, Der Roland von Berlin. Jordan, Die Edda. Bern, Deklamatorium. Wildenbruch, Lieder und Balladen. Dickens, Oliver Twist. Dickens, Das Heimchen am Herde. Dickens, Der Weihnachtsabend. Heldensagen des Firdusi. Kinkel, Otto der Schütz. Hebel, Allemannische Gedichte. Arnold, Der Umzug und andere Novellen. Lenau, Savonarola. Gudrun, übersetzt von Lemmermayer. Dickens, Zwei Städte. Keck, Iduna, deutsche Heldensagen. Vogel, Frau Märe. Brachvogel, Friedemann Bach. Richter, Die deutschen Landsknechte. Beyschlag, Godofred. Beyer, Orientalische Novellen. Homer's Ilias, übersetzt von Jordan. Homer's Odyssee, übersetzt von Jordan Wildenbruch, Sedan. Bellamy, Im Jahre, 2000. Andersen, Der Glückspeter. Volkmann-Leander, Traümereien an französischen Kaminen. Herder,

Herder, Der Cid. Droste-Hülshoff, Gedichte. Eichendorff, Gedichte. Arnim-Brentano, Des Knaben Wunderhorn. Schalk, Nordisch-Germanische Götter- und Heldensagen. Buchner, Lebensbilder deutscher Männer. Deutsches Balladenbuch. Raabe, Der Hungerpastor. Raabe, Die Chronik der Sperlingsgasse. Frommel, Aus goldenen Jugendtagen. Scott, Guy Mannering, Der Talisman, Ivanhoe, Kenilworth. Reuter, Ut de Franzosentid. Ut mine Festungstid. Ut mine Stromtid. Dorchläuchting. De mecklenbörgschen Montecchi und Capituletti. Schurr-Murr. De Reis' nach belligen. Läuschen und Rimels I, II. Hanne Hüte. Kein Hüsung. Herder, Biographie. Cid, Gedichte in Auswahl. Volkslieder. Kleine Dichtungen, Prosaaufsätze und Schulreden. Ideen zur Philosophie der Geschichte der Menschheit. Gerstäcker, Unter dem Aequator. Ebers, Uarda. Der Kaiser. Eine ägyptische Königstochter. Die Schwestern. Frommel, In zwei Jahrhunderten. Wolf-Der Raubgraf. Meyer, Die Leiden eines Knaben. Schulze-Smidt, Franzosen-geschichten. Schoenaich, Carolath, Der Freiherr; Regulus, Der Heiland der Tiere. Schulze-Smidt, In Moor und Marsch. Freytag Die Ahnen. Soll und Haben. Heyse, Novellen. Geibel, Brunhild. Storm, Aquis submersus. Immensee. Land und Leute, Monographien zur Erdkunde. Scobel, Thüringen. Deckert, Cuba. Ruge, Norwegen. Haushofer, Tirol. Heer, Schweiz. Haushofer, Oberbayern. Wegener, Deutsche, Ostseeküste. Haas, Deutsche Nordseeküste. Monographien zur Weltgeschichte von Heyck: Heyck. Kaiser Maximilian I. Bülow, Das älteste deutsche Städtewesen und Bürgertum. Tumbült, Wiedertäufer Heyck, Bismarck. Koepp, Alexander der Grosse. Moebius, Die Nibelungensage. Andersen, Sein oder Nichtsein. Nur ein Geiger. Jacobsen, Niels Lyhne. Shakespeare, Dramatische Werke. Monographien zur Weltgeschichte von Heyck:—Zqiedineck-Südenhorst. Venedig. Steindorff, Die Blütezeit des Pharoahenreiches. Meisner u. Luther, Die Erfindung der Buchdruckerkunst. Heyck, Kreuzzüge und das heilige Land. Erdmannsdörfer, Mirabeau. Heyck, Friedrich I, und die Begründung des preussischen Königstums. Holm, Lübeck. Grillparzer, Sämmtliche Werke. Stifter, Der Hochwald. Das Haidedorf. Scheffel, Ekkehard. Ganghofer, Fliegender Sommer. Der Klosterjäger. Der Unfried. Die Martinsklause. Kraszewiski, Der Dämon. Storm, Auf der Universität. Geschichten aus der Tonne. Nibelungenlied, übersetzt von Freytag. August Graf von Platen, Sämmtliche Werke. Reinick, Lieder. Mügge, Afraja. Müller, Gedichte Auerbach, Schatzkästlein des Gevattermanns. v. Wildenbruch, Neid. Lotti, Islandfahrer. Korolenko, Der blinde Musiker Ludwig, Die Makkabäer. Wallace, Ben Hur oder die Tage des Messias. Freytag, Die verlorene Handschrift. Sudermann, Frau Sorge. Hauff, Phantasien in Bremer Ratskeller. v. Kügelgen, Jugenderinnerungen eines alten Mannes. Sienkiewicz, Quo vadis? Immermann, Der Oberhof. Ludwig, Die Heiterethei. Zwischen Himmel und Erde. v. Gaudy, Aus dem Tagebuche eines wandernden Schneidergesellen. v. Eichendorff, Aus dem Leben eines Taugenichts. Wieland, Oberon. Verne, Von der Erde zum Mond. Reise um den Mond. Die grossen Seefahrer des 18 ten. Jahrhunderts. Die Yangada. Reise durch die Sonnenwelt. Die geheimnisvolle Insel. 20,000 Meilem unterm Meer. Reise nach dem Mittelpunkt der Erde. Reise um die Erde in 80 Tagen. Fünf Wochen im Ballon. Der Triumph des 19 ten. Jahrhunderts. Album von Dresden und der Sächsischen Schweiz. Hauff, Lichtenstein. Schwab, Die schönsten Sagen des klassischen Altertums. Cary, Experimentalphysik. Musaeus, Volksmärchen der Deutschen. Grimm, Kinder und Hausmärchen. Bechstein, Deutsches Märchenbuch. Märchen aus Tausend und eine "Tausend und eine Nacht." Helbig und Hirt, Deutsches Lesebuch für Sexta, Quinta, Quarta, Tertia, Unter Sekunda, Prosalesebuch für Ober-Sekunda, für Prima. Viehoff, Deutsches Lesebuch für die unteren Klassen höherer Lehranstalten, für die mittleren Klassen. Evers und Walz, Deutsches Lesebuch für Sexta, Quinta, Quarta. Andersen, Märchen Björnson, Auf Gottes Wegen. Reden des Fürsten Bismarck. Dickens, Die Pickwickier. v. d. Elbe, Wartburg-Geschichten. Habberton, Helenens Kinderchen. v. Hedenstjerna, Novellen. Knigge, Ueber den Umgang mit Menschen. Jean Paul, Quintus Fixlein. Flegeljahre. Scott, Waverley. Ivanhoe. Kenilworth. Quentin Durward. Guy Mannering. Talisman. Die Jungfrau vom See. Seidel, Leberecht Hühnchen als Grossvater. Wolff, Der Sülfmeister. Thackeray, Der Jahrmarkt des Lebens. Turgenjeff, Gedichte in Prosa. Dunst, Väter und Söhne. Federzeichnungen eines Jägers. Wieland, Geschichte der Abderiten. Weitbrecht, Heilig ist die Jugendzeit. Tennyson's ausgewählte Dichtungen. Camöens, Die Lusiaden. Chateaubriand, Erzählungen. Hoffmann, Ausgewählte Werke. v. Kleist, Sämtliche Werke. Lenau, Sämtlichte Werke. Platen, Sämtlichte Werke. Racine, Ausgewählte Tragödien. Moliere, Charakter-Komödien. Sophokles, Tragödien. Kalidasa, Sakuntala. Morgenländische Anthologie. Anthologie griechischer und römischer Lyriker. Aeschylos, Ausgewählte Dramen. Dickens, Heimchen am Herde, Oliver Twist, Sylvesterglocken, Klein Dorrit. Lie, Der Hellseher. Madach, Die Tragödie des Menschen. Münchgesang, Thankmar der Sugambrer. Die Pyramide von Gizeh. Der Altar des unbekannten Gottes. Kerner, Walter der Erzpoet. Münchgesang, Der Verbannte von Naxos. Der Retter von Neisse. Herbert, Aglae. Newman, Kallista. Wiseman, M. Fabiola oder die Kirche der Katakomben. Stilke, Rinold und Tuiskomar. Klee, Die alten Deutschen während der Urzeit und Völkerwanderung. Möricke, Mozart auf der Reise nach Prag. Wilbrandt, Vater und Sohn und andere Erzählungen. Euripides, Ausgewählte Dramen. Arnold, Die Leuchte Asiens. Ludwig, Die Makkabäer. Aus dem Regen in die Traufe. Kipling, Schlichte Geschichten aus den indischen Bergen. Koerner, Sämtliche Werke. Spielhagen, Sturmflut. Grimmelshausen, Simplicius Simplicissimus. Byron, Ausgewählte Werke. v. Chamisso, Werke. Geibel, Gesammelte Werke. Pfeffel, Ausgewählte poetische Werke. Uhland, Gesammelte Werke. Hebbel, Judith. Gyges und sein Ring. Dickens, David Copperfield. v. der Leyden, Indische Märchen. Zingeler, Der Münsterbaumeister von Strassburg. Kleinschmidt, Die Befreiung Germaniens vom Römerjoch. Germanisches Heldenschicksal. In Zeichen des Kreuzes. Unter dem Sachsenbanner. In Sturm und Drang bewegter Zeit. Aus der Zeit der Thränen. Kreuzfahrt und Römerzug. Der erste Hochflug des Zollernaars. Welscher Frevel, Deutscher Zorn. Ludwig, Deutsche Jugend, über Pflanzenschutz. Lesebuch des deutschen Tierschutzvereins. Hoffman, Franz, Neur deutscher Jugendfreund, Bd. 48. Lang, Mit Ränzel und Wanderstab. Weber, Hans Stock, der Schmied von Ochsenfurt. v. Wildenbruch, Kinderthränen. Schwesterseele. Pestalozzi-Verein, Die Provinz Brandenburg in Wort und Bild. Günther, Der Harz. Lienhard, Der Raub Strassburgs. Werner, Admiral Karpfanger. Kep, Am Rhein. Jacobsen, in Weltwinkel. Lindenberg, Fritz Vogelsang in Kiautschou. Lindenberg, Fritz Vogelsangs Kriegsabenteuer om China. Rogge, Friedrich der Dritte. Wagner, Unsere Vorzeit I., Nordisch-germanische Götter und Helden. Unsere Vorzeit II, Deutsche Heldensagen. Nover und Wagner, Unsere Vorzeit III, Deutsche Volkssagen. Flodatto, Alpenzauber. Daehnhardt, Naturgeschichtliche Volksmärchen. Hübner und Schwochow, Vom Kurhut bis zur Kaiserkrone. Hahn, Deutsche Charakterköpfe. Eyth, Wanderbuch eines Ingenieurs. Gebrüder Grimm,

Grimm, Fünfzig Kinder- und Hausmärchen. V. Zobeltitz, Vierzig Lebensbilder deutscher Männer aus neuerer Zeit. Schulze-Smidt, Pfadfinder. Heyer, Aus dem alten deutschen Reische, historische Erzählungen in romantischer Form:—Kaiser Konrad II, Kaiser Heinrich III, Kaiser Heinrich IV, Der erste Kreuzzug, Kaiser Heinrich V, Die Hohenstaufischen Brüder, Kaiser Friedrich I. Kaiser Heinrich VI, Phillip von Schwaben, Kaiser Friedrich II, Hermann Balk, Die letzten Hohenstaufen, Vaterlandische Geschichts-und Unterhaltungs-Bibliothek: Garlepp, Die Kornblumen von Paretz, Luise, Preussens Engel. Kurfürst und Bauernsohn. Aus Blüchers jungen Jahren. Aus Wrangels jungen Jahren. Von Babelsberg bis Friedrichskron. Ein vergessener Held Friedrichs des Grossen. Springer, Das Volk steht auf, der Sturm bricht los. Hancke, Friedrich Werner, Der Sohn des Veteranen. Des Königs Retter. Wunschmann, Nettelbeck, ein deutscher Bürger und Held. Eine feste Burg ist unser Gott. Der Kommandant von Spandau. Hans Birkenstock, der Landsknecht. Jahnke, up ewig ungedeelt. Kurbrandenburg in Afrika. Wagner, Johann Gotzkowski, der patriotische Bürger von Berlin. Hesekiel, Jesus meine Zuversicht. Des Kaisers Gast. Höcker, Märkisch Blut. Muschi, Allweg gut Brandenburg. Stöwer, Hans von Hake. Garlepp, Die Paladine Kaiser Wilhelms I: Der rote Prinz. Kronprinz Albert und Prinz Georg. Fürst Otto von Bismarck. Graf Hellmuth von Motlke. Graf Albrecht von Roon. Der Löwe von Nachod. Freiherr Edwin von Manteuffel. Freiherr Ludwig von der Tann. Grossherzog Friedrich Franz II. Der Sieger an der Lisaine. August von Göben. Eduard Friedrich von Fransecky. Andersen, O. Z. Anschütz, Erinnerungen aus dessen Leben und Wirken. Arndt, Errinnerungen. Bartels, Hebbel. Boyesen, Kommentar zu Goethes Faust. Brinkmann, Kasper Ohm und ick. Brugsch, Aus dem Morgenlande. Dickens, Dombey und Sohn. Harte Zeiten. Der Kampf des Lebens. Martin Chuzzlewit. Der Verwünschte. Eckermann, Gespräche mit Goethe. Franklin, Leben. Friedrichs des Grossen ausgewählte Briefe. Gobneau, Die Renaissance. Goethes Mutter, Briefe. v. Gottschall, Friedrich von Schiller. Haarhaus, Johann Wolfgang von Goethe. Haek, Phantasie- und Lebensbilder. Heyse, zwei Gefangene. v. Humboldt, Briefe an eine Freundin. Jensen, Hunnenblut. Immermann, Die Epigonen. Lichtenberg, Ausgewählte Schriften Mathesius, Luthers Leben. Mendheim, Uhland. Mignet, Geschichte der französischen Revolution. Puschkin, Ausgewählte Novellen. Riehl, Burg Neideck–Die vierzehn Nothhelfer. Rosegger, Geschichten und Gestalten. Ruppius, Der Pedlar. Vermächtnis des Pedlars. Sarcey, Belagerung von Paris. Schiller und Goethe, Briefwechsel. Scott, Die Braut von Lammermoor. Der Herr der Inseln. Stanley, Wie ich Livingstone fand. Tetzner, Deutsche Geschichten in Liedern. Trenck, S., Lebensgeschichte. Varnhagen, Leopold von Dessau. Lindenburg, Aus dem Leben Kaiser Wilhelms I. Musiker-Biographien. Nohl, List, Pt. I. Göllerich, Liszt Pt. II. Hohl, Beethoven. Haydn. Weber. Spohr. Wagner. Schrader, Mendelssohn. Händel, Kohut, Auber, Rossini. Meyerbeer. Hohl, Mozart. Wittmann, Lortzing. Marschner. Batka, Schumann. Bach. Prochazka, Robert Franz. Niggli, Schubert.

The following presents were received:—From the Minister of Public Instruction: Nauticus Jahrbuch für Deutschlands Seeinteressen, 1899, 3 vols.; 1900, 3 vols.; Beiträge zur Flottennovelle, 1900, 3 vols.; Schmoller, Handels- und Machtpolitik, 2 vols. From Oberlehrer Wilke, Ayrolle, De Bayonne à Toulouse, excursions de vacances, Moulin Le Long de la mer bleue à Bicyclette, lettres de voyage. From Oberlehrer Dr. Klette: Jung, Der Weltteil Australien, 4 vols. From Oberlehrer Ebel: Grosse und Otto, Wohlthäter der Menschheit. From the Michow'schen Buchhandlung: Hoffmann, Neuer deutscher Jugendfreund, Bd. 53. Pajeken, Bob der Fallensteller, Bob der Städtegründer, Bob der Millionär. Deutsches Knabenbuch Bd. IX. Aus. G. U. III. Scholz: Heyer, Der erste Hohenzoller. Murray, Prärieblume unter den Indianern. Riesser: Foehse, Aus eigener Kraft. Aus IVa Reschke: Höcker, Zwei Riesen von der Garde. Aus IVb Henschel; Bernhardi, Rübezahl. Haek, Die Eroberung des Nordpols. Barfus, Vom Kap nach Deutsch-Afrika. Petersen: Beschreibung der Republik Chile. Hamburger: Euripides, Iphigenie auf Tauris. v. Kleist, Michael Kohlhaas, Macaulay, Lord Clive. Homer, Ilias. Herder, Der Cid. Jacob: Hellwig-Hirt, Deutsches Lesebuch für Sexta. Aus Va Mockrauer: Gärtner, Fernando der Elefantenjäger in Südafrika. Jurgens: Rothenberg, Der Skalpjäger. World: Der schwarze Kapitain. Elm: Der deutsch-österreichische Krieg, 1866. Klopfer: Foehse, Die Seeräuber auf Mafia. Foehse, Unter Wilden und Seeräubern. Marcuse: Forster, Unser Kaiser in Palästina. Lemke: Cooper, Lederstrumpf. Salamonski: Fogowitz, Graf Radetzky. Hildebrandt-Strehlen, Hans Martin, Schumann, Franklin der Held des nördlichen Eismeers. Oswald: Höcker, Des Freiherrn v. Münchhausen Reisen und Abenteuer. Altschul: Hauff, Märchen. Dittmann, Am Hofe des Kaisers von China. Hübner: Moritz, Der schweizerische Robinson. N. N., Neue Reise- und Jagdabenteuer. Walther, Dier vier Heymonskinder. Stein: Kinder-Gartenlaube Vol. XI. Sprengel, In der goldenen Ferienzeit. Köppen, Vor fünfundzwanzig Jahren. Schorlemer, Der Boerenkrieg. Beyth I: Schwab, Die deutschen Volksbücher. Hoffmann, Der Held des Niger. Aus Vb Wolff: Ferry, der Waldläufer. Cooper, Lederstrumpf. Wörishöffer, Robert der Schiffsjunge. Aus VIa Isenburg: Bürger, Münchhausens Reisen und Abenteuer. Hofmann Robinson Crusoe. Aus VIb Alberti: Hoffmann, Emin Pascha. Zoch: Reid, Die Skalpjäger. Götze, Zwei Mal Christnacht und Märchen. Pichler, Märchen. Gellert, Fabeln und Erzählungen. Penzig: Hoffmann, Die Weltumsegelung. Dittmann, Am Hofe des Kaisers von China. Schall Höcker, Lederstrumpf-Geschichten. Hoffmann, Don Quixote. Heimann: Mützel, Wissmanns Reisen durch Afrika. Aus le Aaron: Auerbach, Deutscher Kinder-Kalender, 1901, von Burkowitz: Cox, Der schwarze Capitain. Von Ephraim (G. U. III) Schwebel, Hans Jürgen von der Linde.

It may be remarked that the presentation of books to the libraries, of specimens to the museums, and collections of apparatus to the cabinets of the secondary schools, is no uncommon thing in Germany and other European countries.

9. *Scientific Equipment—Kaiser Friedrich Schule—Natural History.*—The following is the account of the equipment for instruction in science, reproduced or translated from the yearly report of the Kaiser Friedrich Schule, Charlottenburg, Berlin[1]:—

Duckbill, Melolontha vulgaris (cockchafer, metamorphoses in alcohol), Tuton cristatus (metamorphoses in alcohol), Water-spider, Unio pictorum, Scorpio europæs, Head of Pelias berus, Haarstern, Pholas candidus, Balanus group (in alcohol). Collozoon inerme (in alcohol), Scolopendra (in alcohol), Torpedo, Synapta, Limnæa stagnalis, Lanius collurio, Tannenhäher, cherry-finch, ortolan, titmouse, long-tailed titmouse, Siskin, Misteldrossel and Wachholderdrossel (thrushes), Gartengrasmücke, Graue Grasmücke,

[1] Translation is doubtless unnecessary, but in some cases the English equivalent has been given for the German.

Grasmücke, Sumpfrohrsänger, Steinschmätzer (wheat-ear, a bird), Ousel, Blue-throated warbler, Seidenschwanz (Ampelis), Mauersegler, Ring-dove, Turtle-dove, Ptarmigan, Krokodil, Carp, Fituslaubsänger, Mucor mucedo (model of), Aspidium Filis mas (model of), Equisetum arvense (model of), Emys europæa, Giant frog, Schleie, Smooth viper, Würfelnätter. Aesculapnätter, Knurrhalm (grunter). Stickleback, Shad, Trout, Roach, Octopus, Aphrodite, Röhrenwurm, Arenicola, Horseleech, Ascaria lumbricoides, Trichina spiralis (eight preparations), Pelagia noctiluca, Tubularia larynx, Pferdeschwamm, Sponge, Bombyx mori, Salmo fario, Grüne Meerkatze, Fish Otter, Badger, Wild cat, Marmot, House-rat, Dormouse, Jerboa, Georychus, Water-rat, Haselmaus, Ermine, Pole-cat, Ferret, Prairiehund, Bat, Dwarf shrew-mouse, Armadillo, Blackcock, Wild-goose, Heathcock, Golden eagle, Sea eagle, Fishing eagle, Falcon, Peregrine falcon, Crown kite, Tree falcon, Carrion vulture, Horned owl, Forest owl, Small owl, Raven, Rook, Grey heron, Crane, Dwarf penguin, Gannet, Auk, Tufted diver, Eider-duck, Krikente, Teal, Papagei, Gryll-Lumme, Cormorant, Spiessente, Blue-footed gull, Game fowl, Heathcock, Smaller bustard, Black coot, Water-wagtail, Mountain wagtail, Ostolan, Reed-bunting, Mocking-bird, Sprosser (a species of nightingale), Tree-creeper, Woodpecker, Black-throat, Hedge warbler, Golden oriole, Flying fish, Blue shark, Sturgeon, Torsk, Pike, Perch, Electric ray, Gecko, Buccinum undatum,

The human torso, microscope slips, cover glasses, Canada balsam, watch-glasses, holders, etc. Microscope with objectives, cell with wet chamber, illuminating lamp, reagents, staining materials.

Collection of Butterflies, Skull of Hippopotamus, Meinhold Tiger, Stag, Gorilla, Mandelkrähe, Mountain finch, Skylark, Wry-neck, Fly-catcher, Fresh-water sponge, Crested titmouse, Double injected frog, Phylloxera vastatrix, Gisskannenschwamm, Ostrea edulis, Leunis' collection of beetles, chafers, etc. Botanical wall maps. Culture plants. Collection of insecta (Neuroptera, Hymenoptera, Diptera). Conchological collection. Colonial collection. Collection of minerals arranged according to the Naumann-Zirkel plan. Collection of rocks, arranged according to Credner. Of sedimentary rocks similarly arranged, Collection of 100 of the principal fossils. Model of the throat organs. Model of the eye. Model of the ear.

Among the presents sent to the Gymnasium were (1) from Herr Hoppe-Westend, an Herbarium, for 326 specimen-cases.

Each class had contributors to the natural history collection. The gifts of stones, minerals, butterflies, animals, etc., are all acknowledged in the Annual Report.

It is at once obvious that the material for teaching natural history is considerable.

10. *The Physics Cabinet, Kaiser Friedrich Schule.*—Besides the necessary chemical substances, burners, wire-gauze, tubes, funnels, tripods, thistle tubes, gas-apparatus, glass cylinders, beakers, flasks, and reagent glasses, etc., the following are mentioned as being acquired for the physical cabinet of the Kaiser Friedrich Schule at Charlottenburg:—Decimal weighing balance, a cutting diamond, set of cork-borers, work-bench, a chemical balance, 10 Bologna flasks, alcoholometer. Aræometer set, a pycnometer, 2 barometer tubes. Apparatus for applying hydrostatic pressure. Holders of various kinds, 3 burettes, blast apparatus, iron wire, set of porcelain evaporating dishes, set of beakers, 6 cylinders with covered plates, filter stand, 3 gauge cylinders, compound cylinder, phial of quicksilver, three-way tap, bottle of quicksilver, Daniel hygrometer, thermometer to 250°, globe-ring apparatus, aneroid barometer, Pascal apparatus, copper aræometer, level, Mariotte apparatus (Seilitch-Weinhold), funnel with capillary tube, cylinder thermometer, spirit thermometer, Muschenbrock pyrometer, 6 freezing bombs, 1 Ingenhousz apparatus for the conduction of heat, glass compression cylinder, Bertram parallelogram, aneroid barometer, pendulum model, 2 magnetic needles on stand, non-magnetic needle with agate, pair of magnetic bars in case, magnetic bar on cardboard with iron filings, nautical compass, declination and dipping needle, iron bar for earth induction, non-magnetic iron bar 30 cm., glass tube with iron filings, apparatus for the examination of magnetic oscillations, suction pump, apparatus for Archimedes' principle, Segner water-wheel, rotation machine with fittings, viz., suspension ball, 2 dissimilar balls, flask for the demonstration of the parabolic surface, regulator, apparatus for the representation of the flattening of the earth, force pump, lever apparatus, inclined plane apparatus, impact apparatus, mining double cone, Chinese stair-case, pair of glass adhesion plates, rapid scales, 4 movable tables, air-pump table for the water exhaust, windlass with cog-wheel, model of Archimedes' screw, dynamometer, diagrams of balances, model of the hydraulic press, weigh-bridge model, model fire-engine, hydrostatic balance, 8 compound pulleys on stand, Attwood's machine with pendulum, 2 universal stands, Wimshurst influence machine, friction electric machine, Töpler electrical machine, hollow and solid cylinder, cylinder, chain and ring belonging to the rotation machine, set of communicating tubes on stands, spring balance, apparatus for stable, labile and indifferent equilibrium, propeller apparatus, wheel and axle, sounding board for acoustics, movable lip-pipe, vox humana, reed-pipe, wooden stand, wooden stand (Schellbach's), Leyden jar for demonstration of principle, pair of telephones, discharger, large two-barrel air-pumps, 3 bell-glasses, etc., belonging thereto, large drop pipe, hour-heliostat, Weinhold's demonstration-goniometer, large optical bench with movable adjustments, 8 discs on stands, absorption cell, symmetrical flint glass prism, Rutherford prism, table for setting up the prisms, achromatic object-glass with 60 mm. aperture, Bunsen gas burner, 4 measured bi-convex lenses, measured bi-concave lens, 3 diaphragms, accurate spherical polished concave mirror of 130 mm. diameter, lantern with small blind screens, projection screen, Bunsen photometer, achromatic prism on stand, receiver with diaphragm, rotation apparatus, transformer, switch, Du Bois Reymond lock with screw-clamp, induction spiral, ampère-meter, voltmeter, Szymanski galvanometer, table with incandescent lamp illumination, suspension and scale, spark inductor (sparking length of 20 cm.) with platinum and Deprez-interrupter, Meidinger Ballon-Element, Meidinger-Element, model of the telegraph, Grove-Element, Bunsen-Element, 2 Leclanché-Elements, Daniel-Element, flask-cell, copper-wire (ordinary and covered), 25 clamps, table with 3 number-apparatus, pressure key, dynamo electrical motor machine, electrical bell with Tyrol bell, rheostat, copper polished pulley head, Wagner hammer, quicksilver break, water vacuum pump with metal vacuum meter and glass manometer on oak-wood board placed in the wall in addition to connections with the experiment table, tangent-compass, disc-syren, accord syren, 2 tuning forks with damper and hammer, projection apparatus with Schuckert's kamera and lenses, etc.; double condenser of 105 mm. diameter, 4 adjustable discs for work under various circumstances, with cooling cell, slide holder, adjustable table, and removable objective of 33 mm. diameter.

Among presents from the pupils were a collection of opaline glass, and from the masters some pieces of cable (from a master of the preparatory school),

11. *The Chemical Laboratory, Kaiser-Friedrich Schule.*—Among the apparatus provided for the Chemical Laboratory were the following items:—5 hemispherical glass evaporating dishes, 6 glass evaporating dishes (2 sets of 3 each), 3 dishes, pure nickel dish, 6 porcelain evaporating dishes, 26 hemispherical porcelain dishes, steel anvil, 4 arsenic test plates, 10 arsenic reduction tubes, 500 gr. asbestos, asbestos wire gauze, 3 sets lipped beakers, 5 lipped beakers, 2 brushes for reagent beakers, beaker brush, 2 filled calcium chloride tubes, 3 drying cylinders, cobalt glass, condensing tube, cylinder with copper expansion, vapour-density apparatus, 4 distillation flasks of various sizes, 5 cylinders for distillation, 2 distillation tubes, Graham's dialyser, copper wire and nickel wire, 12 wire triangles, porcelain covered, adjustable triangle, 11 iron gauzes, iron gauze with asbestos, 5 brass-wire gauzes, supply of pergament paper, 8 tripods, 2 exsiccators, dryer with cock, 2 filter plates, 2 filter flasks, filter papers, 100 filters, 3 pieces filtering apparatus with porcelain rings, 4 Woulff's flasks with three necks, 3 Woulff's flasks with two necks, Woulff's flask with three necks and tube, 3 Bunsen's burners with regulators, Bunsen burner with star top, etc.; 2 triple burners with regulators, 4-flame series burner, 6-flame burner with regulator, crown top for Bunsen burner, Muencke lamp (1 flame), 10 watch glasses, 15 various adapters, 3 weighing glasses, water-bath with tripod, 2 water-baths, caborundum grinder, drawing apparatus, litmus papers, etc.; 6 watch glasses, eudiometer (gas analysis). 2 special stands, tube brush, spirit lamp and appliances, separating cylinder, series of iron weights, cork press, goniometer in case, cylinder of carbon dioxide, 76 reagent bottles, 18 bottles for powders, glass gasometer, 2 glass vessels, dropper, pneumatic bath, analytic balance, 3 small flasks for vapour density determinations, white blowpipe mouthpiece, 2 weighing tubes, set of weights up to one kilogram, 6 gas-production flasks, 2 weighing balances, zinc gasometer, 4 gas washing flasks, burner, 2 filtering tubes, sets of coloured glasses, 2 gas-washing flasks, glass plates of various kinds, combustion tubes, refraction tubes, glass tubing, mica plates, bell-glasses of various forms with cocks, etc., caoutchouc tubes, stoppers, etc., glass and brass cocks, 3-way glass cock, apparatus for determining scale of hardness, 2 test-tube holders, wood and one of brass siphon, caustic potash tubes, 32 round retorts of various sizes, 76 stand-retorts of various sizes, 17 Erlenmeyer's flasks and various other similar pieces of apparatus, 2 retort carriers, set of cork-borers and sharpener, 2 Liebig condensers, 14 various forms of tubes with bulbs, 3 copper spirals, glass and nickel spoons, spatulas, etc., vacuum apparatus, 4 Burettes, various forms, 2 Burette-stands, brass cylinder, retort, etc., pipettes, Rose's and Wood's fusible metal, metal funnels, etc., agate mortar, iron mortar, diamond mortar, 2 steel pincers, various forms of similar apparatus, platinum foil, platinumcone, platinum wire, oxygen cylinder, pressure control, various forms of crucibles, with and without covers, hot-water apparatus, analytical balance, Fletcher-oven with complete equipment, drying stove, combustion furnace, 135 bottles for preparations, 27 funnels of various forms and sizes, and a large number of other minor pieces of apparatus.

The above supply of apparatus, recorded in the annual report, is added to continually, and replaced as broken. This reference is sufficient to shew that chemistry is taken experimentally—that it is not merely talked about.

12. *Geographical and similar equipment, Kaiser Friedrich Schule.*—The following are noticed in the annual report, viz.:—

Debe's physical map of the earth.
Bamberg's political maps of—Europe, Asia, Africa, North America, South America.
Kiepert's political map of—The Balkans, Russia, Italy, Spain and Portugal, Scandinavia, France, the British Isles.
Straube's map of the Northern Heavens.
Hirt's principal morphological features of the earth's crust.
Brecher's Historical wall-maps of Prussia. Schott's map of the world, showing the marine currents. Gaebler's German Colonies. Kampen's Graecia, Italia, Gallia. Spruner-Brettschneider's Europe at the time of the 30-years' war. Europe, 1700–1789. Europe, 1789–1850. Ebeling's Relief of Vesuvius. Kiepert's Graecia, Imperia Persarum et Macedonum, Asia Minor. Schwabe's Rom. Gurlitt, 6 tables of the Cæsars. A Roman Legion. Physical school globe. Tellurium, with globe of 18 cm. diam. Planetarium, with clockwork apparatus. Collection of illustrations of the Roman Army. Text to Cybulski's Tables for illustration of the battles of the Old Greeks. Lehmann's 20 Geographical pictures.

Presents are received—such, for example, as from the Minister of Public Instruction: The journeyings of the Imperial German Navy. From pupils: Photographs of Niagara, New York; special map of France, for use in reading French History.

13. *Drawing Equipment, Kaiser Friedrich Schule.*—The following material was purchased during the year for the drawing lessons, viz.:—

Six Roman earthenware vessels, Renaissance Finial in wrought-iron, tin vessels, coffee-pot, tankard, washing-jug, 2 dozen baskets, 2 high baskets, 7 vases, 2 cups, jug, various forms of wine-glasses, 2 dragons, 47 flies, 11 cases with 23 butterflies, various shells, brass-kettle, coffee-mill, caraffe, steel plate, dry branches and fruits, signal horn, mandolin, triangle, tambourine, 5 hand-mirrors, envelopes, fish (still-life), various forms of birds, nests, sickles, hammers, handsaws, hatchets, hammers, knives and forks, armour, daggers, battleaxes, etc.

Some of the pupils made presents to the school collection. This is by no means unusual.

14. *Equipment for Music and other subjects, Kaiser Friedrich Schule.*—The musical works of various classical authors were purchased, a Straube's harmonium, a grand piano, music-stands, etc., etc. For *manual training* the necessary tools and material were purchased.

15. *Miscellaneous, as regards the equipment of the German Gymnasien.*—The following are taken at random from the yearly reports of German Gymnasien. The *Vitzthum Gymnasuim* of Dresden, mentions, among the additions to its physics cabinet for the year 1902, the following pieces of apparatus:—

A water-influence machine, a demonstration-barometer, various accessories for Looser's thermoscope, a mechanical model of the section of a steam-engine, so designed as to study the motion of its parts; an induction-coil with 20 cm. spark, with platinum and mercury interrupter (Meiser and Mertig's); an Elster and Geitel's high-tension transformer, an impedance apparatus with glow-lamps, an ampère and

a volt meter, an adjustable rheostat, Röntgen apparatus with platino-barium cyanide screen, a battery of large accumulator cells, an eight-plate Toeppler influence machine with rotating discs (Voss system) condensers, etc., etc.[1]

An interesting feature, and by no means an unfrequent one, *is the presentation of apparatus by those who pass the final examination*—the arbiturienten. For the same Gymnasium the following presents, among others, are reported :—[2]

A hand-dynamo, microphone and telephone, apparatus for measuring the linear expansion of solid bodies, Morse telegraph and accessories, small accumulator battery, small electro-motor, a small induction apparatus, a number of Geissler tubes, a Morm machine, a steam apparatus and calorimeter.

Anonymous contributions to the same Gymnasium contained the following :—

A Looser's differential thermoscope with a number of accessories, condensing apparatus, apparatus for demonstrating Döppler's principle, apparatus for contraction by means of cold, Weinhold's apparatus for demonstration of positive electricity, a model of self-regulating arc lamp, a stand for and a number of new incandescent lamps, a milliampère meter, a Waltenhofen's damping pendulum, two high-insulated spherical conductors (Weinhold's), stand for spectrum analysis, etc., etc.

These presents to educational institutions are a happy augury of progress, and it might be hoped that equally valuable contributions to our secondary schools will soon become a feature of the future history of secondary education in this State.

In the additions to the "Städtische Oberrealschule zu Charlottenburg"[3] the following somewhat special instruments were noticed :—Bolometer with stand, solenoid for demonstration of lines of force, hollow mirror with oscillator, apparatus for the analysis and synthesis of water, ozonising tube, a number of organic and inorganic preparations for the collection and use in the laboratory.

In the additions to the apparatus of the Falk-Realgymnasium in Berlin,[4] were included apparatus for high potential experiments, for measurement of Hertzian waves, apparatus for direct measurement of resistance up to 1,000,000 ohms. In the natural history cabinet was a collection of exotic insecta affording instances of mimicry.

16. *Demonstration Preparing Rooms.*—A feature noticed by the Commissioner in the newer schools was that the physical cabinets had adjoining rooms, where experiments could be prepared beforehand. These opened into the class or lecture room, by sliding the partition at the height of the table; then the table with the apparatus could be rolled onward from the preparing-room into the class-room. This is an excellent feature. In the modern German schools the general arrangements are excellent as regards efficiency and convenience.

The annual reports of the Gymnasia usually make full references to any special features of the larger equipment. For example, in the report for the Grand Ducal Ostergymnasium of Mayence for 1901–2, there is a fairly full description of electrical apparatus for dealing with a current of high potential for instruction in physics in the Gymnasium.[5] The "*Elektrizitäts-Aktiengesellschaft*" of Mayence (formerly Schuckert and Co.) supply a high-potential three-phase alternating current (3,000 volts). This is dealt with by a "step-down" transformer; and the account gives a full description of the disposition of the whole of the apparatus and its use in instruction in physics.

17. *Literature as to equipments in German Gymnasia.*—The following references to the literature dealing with recent items of equipment in German secondary schools will be of value to students :—

Hammerl, 1895.—Progr. Oberrealschule Innsbruck, 1895. Die elektrische "Anlage im physikalischen Kabinett."

Hammerl, 1895.—Progr. Realgymnasium Gera Beschreibung des Neubaues.

Lenz, 1897.—Progr. Gymnasium Elberfeld. "Die Einrichtungen und Lehrmittel für den wissenschaftlichen Unterricht."

Schlegel, 1897.—Progr. Kaiser Wilhelms Gymnasium, Berlin. "Die Einrichtungen für den physikalischen Unterricht an Gymnasien."

Rittingshaus, 1897.—Progr. Realprogym. Lennep. "Die elektrische Starkstromanlage der Lenneper Realschule."

Troje, 1898.—Progr. Altstädt. Gymn. Königsberg. "Neuere Unterrichtsmittel am Altstädt."

„ 1899.—Progr. Oberrealschule Cassel. "Beschreibung des Neubaues."

„ 1900.—Progr. Realgymn. Elberfeld. "Beschreibung des Neubaues."

„ 1901.—Progr. Realgymn. Giessen. "Die Einrichtungen für den physikalischen und chemischen Unterricht in dem Erweiterungsbau."

The above is, of course, not exhaustive. It will suffice to sufficiently illustrate, not only how German secondary schools are equipped, but also the manner in which they afford public information as to their progress and development.

18. *Conclusion.*—The details of a recently-built German Reform Gymnasium are elsewhere given.[6] It will suffice to observe that they are well adapted to their end, and are specially designed to afford every assistance to the necessities of proper scientific instruction. The libraries in the older secondary schools of Europe are sometimes very extensive.

The maps, charts, diagrams, casts, models, physical and chemical apparatus, geological, mineralogical, botanical, and zoological collections are such as to enable the subjects to be taught thoroughly. This fact, taken together with the fact that the teachers must have specially devoted themselves to the subjects in which they give instruction, explains why students enter the Universities better prepared than they do with us.

Our secondary teaching cannot reach the plane of European without similar scientific and general equipment.

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[1] Jahresbericht des Vitzthumschen Gymnasiums: herausg. v. Prof. Dr. Julius Adolf Bernhard, Rektor, Dresden, B.G. Teubner, 1902, p. 7.

[2] *Ibid.*, p. 7.

[3] Bericht über das Schuljahr, 1901–2. Direktor, Dr. Gropp. Charlottenburg, Reinhold Kühn. 1902.

[4] 122-ter Bericht über das Schuljahr, 1901–2. Prof. Dr. Schellbach. Berlin, 1902.

[5] Jahresbericht des Grossherzogl. Ostergymnasiums zu Mainz, für das Schuljahr, 1901–2. Die elektrische Starkstromanlage für den physikalischen Unterricht am Ostergymnasium von Prof. Dr. Fink. Mainz. H. Prickarts. 1902.

[6] By Mr. J. W. Turner.

CHAPTER XXX.

CHAPTER XXX.

Defects of Secondary Education in New South Wales.

[G. H. KNIBBS.]

1. *Introduction.*—That the quality of *secondary education* is of the highest importance in the Educational System of a State, is obvious when it is remembered that not only the efficiency of professional and higher education is dependent upon it, but also the efficiency of the direction of the affairs of a country, and of its industrial and commercial operations. The problem that we have to face is "how to bring our secondary education on to the level which is being reached in the advanced countries of the world." It is for this reason that it has been necessary to review, somewhat extensively, the incomparably better systems of the greater part of Europe, and the systems of America, and to shew that the countries in which education is weakest have sometimes striking resemblances with the features of our own system. A careful study of the preceding chapters, and a comparison of the state of things therein revealed, with the education here available for our children will satisfy any unprejudiced critic that, relatively, secondary education with us is in a very parlous condition.

It is well that we should honestly and soberly face this fact, rather than that we should allow any offence to our *amour propre* to cause us to reject it. And in so doing, it will be well if we also remember that the progress of the countries with better systems,[1] tends, in virtue and through the influence of the systems themselves, to most rapidly reach the higher forms of educational excellence. *The better educated country is likely to judge the more accurately, as to the truest path of progress.*

The question of the immediate practicability of any proposed reform is of small moment compared with the importance of establishing a well-defined aim-point toward which education must progress if it is to become equal to that in more advanced countries. In discussing the defects of our secondary system, therefore, it is necessary, *initially*, to discard attention to the existing difficulties in the way of founding a good system. To entertain them at the first stage would tend to overwhelm us with a sense of the hopelessness of the situation. Hence *the difficulties must not be allowed to obscure the real problem, viz., the creation of an appropriate educational ideal.*

When, however, the ideal *has been* created, *then* the chief place is claimed by the second element in the problem, viz., how to best bring about the necessary changes.

In reviewing the defects of our educational system it will be well to keep both the ideal aim-point and the practicality of any scheme of development under simultaneous observation. This will help us to realise, not only the essential character of our disabilities, but also their seriousness when reform is attempted.

2. *Essential character of the defects of New South Wales Secondary Education.*—The defects of secondary education in New South Wales are partly the consequence of faults or shortcomings in the earlier stages of education, and are partly dependent upon the lack of necessary elements in the secondary stage itself.

To grasp the issue properly it is necessary to keep in view the difference between higher primary education and the preparatory stages of secondary education, properly so-called. In this connection, Chapter LIV of the Interim Report should be read,[2] and in particular sec. 11; and also this Report, Chapter II, sections 9, 10.

Briefly stated the point is this:—Up to 10 years of age, education may be called *elementary*, and all children could with advantage follow the one general course.

From 10 to 12 the schools should be divided into (a) *primary*, and (b) *preparatory secondary*. The pupils of the former might, after 12, go on to the latter line, but only by devoting themselves in some special way to the studies omitted. (a) and (b) may, of course, be different (parallel) classes in the one school. From 12 to 14 on the (a) line would be devoted to *higher primary* and would prepare for ordinary callings. The artisan and workmen generally would be equipped through this line, and their education would be much more satisfactory (judged as regards its utility for their callings in life) than if they took the preparatory stage (b) for secondary education. The truth is that these higher stages ought to shew *characteristic* differences. The ordinary workman, for example, does not require French and German, Greek and Latin. Subjects more immediately useful may be substituted for these in his case, that is, he requires *higher primary education*, the details of which are orientated in view of his probable calling in life.

The pupil, on the other hand, who wishes to engage in callings involving the direction of industrial, commercial, scientific, or literary effort, or who desires to follow what are known as professional callings, must be concerned with the definite elements of secondary education. So that from 12–14 years of age there should be distinct types of education, viz., higher primary, andthe lower division of secondary education.

Again, secondary education itself must exhibit some variety of development. The reform system of Germany makes the preparatory course up to 12 alike for all, and then calls for a choice of one of three paths, which might perhaps be described as modern quasi-classic (or quasi-modern) and classic.

Remembering that it is only by definite organisation that thoroughness can be obtained, we are brought face to face with the *conspicuous* defect of secondary education in New South Wales, its want of organisation. This want of organisation touches the stage of education up to 14 years of age also, it is not so developed as to respond to the double need, viz., the need of those who are to abandon the ordinary school career at 14, and of those who wish to have a secondary education. 3.

[1] Other things being, of course, equal. [2] Loc. cit. pp. 469-474.

3. *Effect of lack of organisation.*—Lack of organisation is immediately felt in two important particulars, viz.:—

(1) The development of the curriculum.
(2) The professional efficiency of the teaching staff.

Each of these obviously reacts on the other, and must inevitably do so. One of the great advantages of a definite régime as regards curriculum is, that the stage of education reached by a pupil is definitely determinable. It is mentioned in Chapter XXV, section 4, herein, that in Italy the "status of a student is independent of the province or commune in which he has been educated. He can commence his education in any part of the territory, and without inconvenience, delay, or loss of status, complete it in any other part."

Where each school in a territory developes its own curriculum in its own way, and employs teachers who, however well-educated, do not pass through a well-organised and publicly accredited professional education, there can be no general confidence in their work. That this is so is seen in the fact that an appeal to some outside authority of sufficient eminence is made, as for example, to the University. Thus special examinations, viz., the "Junior Public," the "Senior Public" the "Matriculation Examination," are held, for the purpose of appraising the educational status of the school pupils and determining, if necessary, their fitness or otherwise for still higher forms of education.

That this is educationally a very defective system is obvious *a priori*, and is confirmed by educational experience, for it promotes a "cramming" system with its attendant consequences. To this point a return will be made.

The absence of a definite curriculum for various necessary courses makes it impossible to have any real co-ordination of education.

Each secondary school of our State is, practically, a law unto itself. Under such circumstances it is difficult to establish any great educational traditions or to promote any thorough and obligatory system of professional training for teachers. The necessity for improvement in this respect has, it is true, been recognised by the Teachers' Association, and some steps have been taken to remedy this state of things. These, however, are quite inadequate, and it would be idle to pretend that any sufficient success has been achieved. It is quite impossible to represent the professional education and training of secondary teachers in this State as being in any way comparable to such training, for example, as has been outlined in Chapters XV, XXI, and XXII of this Report. Whatever we may think of the possibility of reaching so excellent a system of professional educational teaching in New South Wales, it is undoubtedly important that we should understand the inferiority of our system. It will take long and strenuous effort to bring about that *general* recognition of our educational needs, without which it will be practically impossible for our administrators to attain the end demanded by *urgent* reform. For we have indeed a long way to go.

The fact that there is no general scheme for the professional education of secondary teachers, reacts very adversely also upon the proper co-ordination of each stage of education. We are the victims of a slipshod idea that what has been neglected at one time can be made up at another. The proposition is, of course, to some extent true, but *it militates against the thoroughness* which is characteristic of some of the European countries and which also is being aimed at in America.

4. *Absence of Definite Curricula.*—It will be at once recognised that were every school provided with a thoroughly educated and thoroughly trained teaching-staff, under no temptation to misrepresent the work of their school for the sake of its reputation, and because of competition with other schools, it would be easy to make the organisation such as would allow the right to pass on to successive higher stages of education to be determined practically by the teachers themselves. This can be done by making the result dependent upon not merely the marks obtained at a final examination, but also upon work done during the part of the school career immediately preceding it, or rather, subsequent to whatever examination of the same type had last been passed.

In order that the successive stages should have a definite educational significance, it is essential that they should conform to a definitely outlined curriculum. It was for this reason that the Commissioner gave the details of the curricula of the Lyceums and Colleges of France (see Chapter XVII); they afford an opportunity of forming a definite conception of what is meant. In Chapter XVIII, the significance also of "Recent Reforms in French Secondary Education" is outlined. The latter will enable us to recognise that the curricula must always be regarded as subject to general modification. But this modification must be a definitely recognised one.

When we think of the circumstances through which a recognition of the necessity for modification comes, it will be self-evident that the curricula must not be regarded as mechanical fetters, suppressing all individuality in the teaching; nor are they so. The boast is alleged to have been made, that in France the Minister for Public Instruction can say at any moment what is being done throughout the schools and colleges of the Republic. Like most dramatic statements this must be taken with a considerable number of grains of salt. As a matter of fact, there is no tendency to crush the individuality of every teacher or of every school, and in both cases the treatment of the curricula bears the impress of the personality of school or teacher. It is impossible that it should be otherwise, and anyone who imagines that the French curricula are manacles to shackle all freedom, misconceives their function, or their actual operation.

The real function of the curricula is to give a detailed expression of the highest educational opinion—viz., that of the best educational experts in the State—as to what should constitute what may be called the *normal* form of the educational courses. This has conspicuous advantages over merely generalised suggestions as to the course in a syllabus. However well the latter may be used, even by teachers who have the necessary cue by a thorough professional training in well-organised normal schools, they are inadequate for that degree of identity of instruction by which alone it is possible to guarantee a proper co-ordination of all its grades. It is these definite curricula which guarantee—assuming, of course, the existence of a sufficiently highly educated teaching staff—that passing through a certain stage shall have an absolutely definite educational significance. They alone can give that clear indication of preparation which is necessary in attempting to determine the subsequent progress of the pupil or student.

Those who misconceive of the French system imagine that the definitive character of the curricula stunts and limits the individuality of the teacher; it is necessary, therefore, to make some reference in regard thereto.

First

First of all, it may be said that notwithstanding the fact that the work in each year is outlined in great detail, there is no undue limitation of freedom. It is even possible to admit definitely organised experiments. Without going into the details of these, it may be stated that an endeavour has been made to ascertain how far it is wise to stimulate the duller section of the class to work on the plane possible for the brighter section, and the evidence points to the unwisdom of paying too great a regard to the apparent limitations of the duller section, for the progress of the latter in attempting to work on the plane of the higher section was greater than usual. This by the way. Such an experiment as has just been referred to, is a sufficient answer to the proposition that the French system extinguishes the individuality of the teacher or that of the school. It controls, it is true, the general trend of the teacher's effort and it sufficiently holds him to a course to enable a pupil to pass at once to the corresponding stage in a similar institution wherever situated, or should he want to go on to another branch of education, it gives definite information as to his exact educational status or the sufficiency of his preliminary qualification.

No thoroughly organised system can afford to be without definite curricula; they are a *sine qua non*. If one ask throughout this State (even at the present time) for a printed curricula, outlining in detail the courses in the primary or secondary schools, he will find that they are not to be had. Even the State High Schools (at least at the time of the Commissioners' inquiry) had no printed curricula, and the syllabus of work gave only the merest outline. Take, for example, the indication of the teaching in Physics, and let it be compared with the curriculum in a French Lycée.

The course in Physics in the High School for Classes VIb, VA and VB, was said to be as follows:—

> Units of Measurement (C.G.S.), Properties of Solids, Liquids and Gases; Universal Attraction; Laws relating to Gravity; Specific Gravity; Newton's Laws of Motion (3); Pressure of the Atmosphere; Barometers; Stable and Unstable Equilibrium; Parallelogram of Forces; Levers, Pulleys, etc.; Potential and Kinetic Energy; Surface Tension; Capillarity. Generation of Electricity by Batteries; Local Action and Polarization; Electrical Units; Induction by Currents.

Let this be compared with what is given in Chapter XVII., section 7D, for pupils 16 years of age, for sections 8G and 8H for pupils 14–15, sections 9G and 9H for pupils 15–16, sections 11B and 11C and 11F for pupils 16–17 years of age, or again in sections 12G, 12H, 12I, 12J. It is true that recently the course has been improved, but it cannot be seriously compared with what is done in France.

In this connection it should also be remembered that there is a difference between professional education of the teachers.[1] The difference will be recognised on reading the scheme of qualification for the French teaching staff (see Chapter XV), or that for the German teacher (see Chapters XXI, XXII). We can reach the same plane of excellence only by a similarly thorough régime. There is no other way. Our aim point must be made as high, or we must content ourselves with educational inferiority.

Summing up, we may say that definite curricula ensure a proper co-ordination of education; they keep the educational scheme under more critical review, and they therefore tend to continual improvement. The criticism of method and result is more definitely focussed; individual genius and teaching power are not really hampered, nor is individuality in teaching restricted; while the curricula afford a guarantee throughout the Republic of a definite state of educational qualification having been attained by successful pupils. The plane of instruction in the various subjects cannot hope to be reached in countries with less perfect organisation, because method and training are important factors, and education is not exceptional in these respects.

The absence in the curricula in the secondary schools of New South Wales of exact definition must, therefore, be regarded as a serious defect, as one gravely limiting the opportunity for education in the State. No direct comparison can be made between the schools of the State; the only gauge of their status is an indirect and inferential one from the success or otherwise of such pupils as they may send on to the University.

5. *Defects in the Professional Training of the Secondary Teacher.*—Many of the teachers in our secondary schools are men of University education, and not unfrequently their University career has been a brilliant one. Whatever the merits or demerits of our system they are its products. Their outlook and traditions are considerably influenced by those of the United Kingdom, except where they have had long residence in European countries. The sources of information, too, have not been conspicuously abundant from other lands, except through literature read by a minority.

There is a point of some importance regarding specialism in teaching to which attention should be given. It has sometimes been claimed by those who have distinguished themselves both in classics and mathematics (double firsts) that they are *qualified to teach in both subjects* (on the plane, that is, of secondary teaching). At first sight the claim might seem a plausible one. The evidence, however, is overwhelming that *the best results are obtained by those who have initially a broad education, and who afterwards specialise and teach within the sphere of their specialty*; thus the European system is one where the teacher teaches only a single subject or a cognate group, and it is this specialism which enables him, not only to keep in touch with all the latest developments of his subject, but also very often to be a practical worker therein. It is no uncommon thing in the annual reports of German secondary schools to find scientific appendices containing articles of eminent merit. There is a freshness, a precision and an enthusiasm in the teaching of the specialist (for in nearly all cases his special subject expresses his personal preference among subjects of instruction) that is rarely to be found in the teacher called upon to distribute himself over several unrelated subjects.

It is perhaps a little difficult for those unacquainted with the fundamental differences between the Continental and English systems of education to recognise the effect of the transfer of what has been called the Baccalauréat from the University to the secondary schools. The passing of the final examinations in secondary schools is really a graduation, so that the University course in Europe is comparable to a post-graduate University course with us; hence the plane of work of the Continental University is both freer and higher than it is in the Universities working under the British system. This is not the place where this, as a general question, can be appropriately dealt with; it is mentioned only for

[1] The French teacher in a French lycée or normal school is sometimes an eminent contributor to Science; he is always an approved specialist in his subject.

for the purpose of shewing how high is the scheme of qualification of the European secondary teacher. Restricting the question to the matter immediately in hand, it is necessary to read, for example, Chapters XXI and XXII on the educational qualifications and practical training of secondary teachers in Germany. After a very much more thorough educational career than is represented by graduation in one of our Universities, and after participating in all the advantages of specialism in instruction, the German teacher is required to pass through a most thorough professional training. According to the educational traditions of that country, the excellence of his academic career affords no ground of excuse for not passing through systematic professional training before he is allowed to teach. It is nothing that he is a Gymnasiast and a Doctor of Philosophy. He must further be trained. A comparison of this with the state of affairs here will reveal how it is that German education is so much superior to ours.

This is a matter of no moment *only* if good education is nothing more than a luxurious ornament. If, on the contrary, it is part of the secret of individual and national power, then it becomes a matter of the gravest concern, and the question as to whether expenditure on education is as imperative for the protection of a nation as is expenditure on war material is one that should not be lost sight of in the consideration of the defects of an educational system. The interdependence of the professional education of teachers and national existence may not be so remote as is commonly believed by us, and it may be noted that both Germany and Japan are countries in which the intimacy of that interdependence is firmly believed.

A word or two may be said as to the effect of the thorough professional education of the secondary teacher on the co-ordination of education. It is evident that the more highly educated the teacher is, the more valuable will be his opinion as to the significance of the various details in educational process. He can therefore render more efficient service in all attempts to give it organic unity. Hence it follows that the well-trained European teacher may be more safely charged with the responsibility of determining the qualifications of the secondary pupils than the teacher in a country without system. Such determination, viz., by the teacher, is better than is possible with any outside authority.[1] The estimate of the abilities of the student of a Gymnasium, by his career therein, together with the closing examination thereof, is more assured than is the estimation made by any outside authority. And if in this country we had secondary schools as well organised both as regards curricula and personnel, and as well equipped scientifically, as the secondary schools of Europe, we should have no hesitation about adopting the Continental method of determining the fitness of pupils to go on to the University; we should recognise that a Matriculation Examination held by the University itself was relatively most unsatisfactory. To this point we shall later return.

From what has been adduced it is evident that our scheme of professionally educating and of professionally training our secondary teachers bears no comparison with the methods of Europe, and that however difficult it may be to reach the excellence to which they have attained, we should make our aim-point for steady reform such as will ultimately at least make us equal. It may further be alleged that this defect reacts profoundly on the efficiency of education by rendering its general organisation most imperfect. Further, that it militates against the efficiency of any criticism of our education.

6. *Absence of Co-ordination.*—As already indicated, the co-ordination of education has been discussed in Chapter LIV of the Interim Report, and its significance has been pointed out in sections 10, 11, and 12 of that chapter. The conclusions expressed in the last-mentioned section are that—

(1) The ultimate possibility of replacing special examinations held by outside authorities—by examinations held by the schools themselves—should be kept in view in every future attempt to more thoroughly co-ordinate our educational system, since the present method is not the best in the interest of educational thoroughness.

(2) A definite programme of educational possibilities under existing institutions should be officially outlined from time to time, shewing clearly the scheme of qualification for particular callings.

Little can be added to this. It may however be noticed that definite co-ordination reacts favourably upon the curricula, upon the professional training of teachers, and upon the whole organisation of education, whereas slipshod methods tend to general deterioration. That has been recognised in England, and the registration of teachers is an initial step toward remedying it. Some such step will be necessary here if we are to educationally progress as we should, and such a step should be early taken. It may be fairly said that co-ordination, in any real sense, is impossible, except under a régime of definite curricula, and with thorough professional training for teachers. Indeed, these are the elements which ensure co-ordination being something more than a mere name. It cannot be ignored that, for whatever career a pupil prepares himself, a definitive scheme has great advantages; and if at any time a change of intention as to career arises, a decision as to what is involved, so as to maintain educational thoroughness, is easily reached. Here we have not reduced education to a system; and that this is so is testified by the fact that we have no definite curricula, in the sense that such exist in Europe, for all stages of education. This reacts, also, on our technical education.

7. *The absence of graduation in Secondary Schools.*—Throughout the whole of Europe that organisation of secondary education which allows graduation to take place at its close under examinations held in connection with the schools themselves is regarded as a distinct educational advance. As already pointed out, it presupposes a definite régime and professionally-trained teachers. It charges those who are engaged with the education of the pupil with his examination. It is incompatible with the "cramming" system, with which we are only too familiar.

A word or two in reference to this last is important, because it is not only a serious defect in our educational method, it also often works physical injury to our rising generation. Just as a university is under no temptation to pass a high percentage of pupils, to shew what an excellent teaching institution it is, so the secondary schools of Europe are free from the temptation to advertise themselves by the percentage of success in their final examinations. Similarly, the pupil is not induced, to the neglect of his general proficiency, to make a selection of subjects in which he imagines his chances of success are most secure.

Secondary

[1] As for example by examinations held by a University.

Secondary schools in New South Wales are under the temptation of appearing well in public estimation through the percentage of passes they obtain in the pupils sent on for the University examinations. This tends to a certain amount of concentration of effort on those who intend to present themselves for these (as in the case of candidates in the Junior or Senior Public Matriculation Examinations). This concentration is not general, but special; it is directed solely to the subjects in which they are to be examined. In other words, our educational organisation is such, that *special "cramming" to pass examinations is a characteristic feature.*

We may first notice the physical consequences of this. The interdependence of the school's reputation and the percentage of passes tempts the teaching staffs of such schools to put the pupils under very great pressure, particularly in the case of boarding-schools. The parents are either unaware of this, or they imagine it is the price that must be paid for success; and cases are not unknown where the health has been permanently impaired by the process, especially in the case of female pupils, on whom the heavy work, as a rule, falls during and immediately after the period of pubescence. Occasionally, even the gravest results follow.

The steady effort in a school governed by rational educational methods is in no sense a danger; and a revision of our scheme in this respect will be an advantage. It may take some time to bring it about, but that the change should be made is incontestable.

No educationist of any reputation will defend "cramming" as an educational process. The scheme of submitting oneself to an examination held by an outside body involves the employment of what are known as coaches. Coaches have a double function. In part they are, of course, true *teachers;* but the teaching element in their work is not its characteristic feature. They are concerned, not with thoroughness, but with skill in passing examinations. Their experience of the idiosyncrasies of examiners, and of the history of preceding examinations, is as important as their knowledge. Whether it is generally recognised by those who have the honour of setting the questions at examinations or not, coaches believe that, by a process of elimination, they can guide those who requisition their services as to how to prepare for a particular examination. They classify previous questions, then analyse them, and endeavour to determine the idiosyncrasies of each examiner in such a way as to decide what he is likely to do in his next paper. Noticing the character of the papers recently set, he advises the candidate that he will do well to disregard them and work on other lines. The personality of the examiner is for him a far more important study than almost anything else. Experience has shewn that he would be in the last degree unwise if he merely urged his pupil to acquire a comprehensive knowledge of a subject and then take his chances. The "coach's" whole business is to help his client to distinguish himself with but a modicum of knowledge; and it is well known that pupils preparing for an examination will do *academically* better by a wisely-guided system of "cramming" than they will by broad and systematic reading.[1]

The scheme is as demoralising as it is unnecessary. Its influence will disappear almost completely when we have thoroughly educated teaching staffs in secondary schools, to deal with the pupils under their own care and appraise their educational status.

It is this fact that has been recognised in the European systems; and the graduating examinations at the close of the school career, held over the entire territory, are a great advantage over our system.

It is, of course, impossible to do without examinations, but real educational advance involves the abandonment, as far as possible, of all examinations that lead to "cramming." That is really the whole point. The regular work, for example, of the German school for the Arbiturientem Examen, or the Einjährige Examen, stands in favourable contrast with the work that takes place in our secondary schools, by means of which an attempt is made to secure success at the University examinations.

It is right here to remark that we must not be premature in any endeavour to dispense with the the present régime. Before University examinations can be dispensed with it is absolutely necessary that secondary education be properly and definitely organised, and that the teachers in secondary schools be *professionally* educated and trained.

The organisation of secondary education will involve a limitation of the absolute freedom of the existing system, but this limitation is in the public interest, and its incidence will not be felt as a hardship if it is brought out by a definitely indicated scheme of declared reform.

In connection with the Matriculation examination, it ought to be mentioned that we are following British traditions, and we cannot depart therefrom until we have gone for a very long distance on the path of educational reform.

The other examinations held by the University are held in virtue of a real need which exists in the community, and in response to a public demand, viz., that the attainments of pupils educated in various schools of the State shall be appraised by an impartial and sufficiently eminent educational authority. Obviously this must continue until the organisation of education is such as to admit of the examination being undertaken by the secondary schools themselves on some such lines as are at present characteristic of Europe.

When this is possible it will be also possible to relegate the Matriculation to the secondary school, and not only so, but to make the first step in graduation the close of the career in the secondary school. When this is done the work in the University will assume a more advanced character. This question is, however, so important that it must be discussed independently.

8. *Influence of Early Stages on Subsequent Education.*—A definitely co-ordinated educational scheme, so designed as to involve passage from one stage to another by examination in which mere cramming goes for very little, tends to thoroughness in the latter stages of the educational career.

A glance at the scheme of co-ordination in Chapter II, section 10 of this Report, shewing the points of departure, will reveal at once how much depends upon preliminary qualification. Where commercial or special forms of industrial education or of scientific education, are preceded by appropriate preparation they can lay some claim to efficiency; where the anticipatory preparation does not exist they are more or less pretences. The work of the Commercial or Technical Educator will be enormously hampered by any want of preparation in the pupils who present themselves.

The

[1] It is well that we should face this fairly and without feeling, and deliberately ask whether we had not better get rid of a régime that relies so implicitly upon examinations for which pupils and students "cram."

The same thing applies to the career in the University. Want of preparation hinders a University from working on its appropriate plane. Chapter III in this Report has been devoted to the discussion of the place of Latin and Greek in secondary education. Incidentally it has been shewn that our achievements are not comparable to those of the Continental School and that the work in the Continental University is consequently of a more advanced character. In sections 9, 12 to 17 inclusive, evidence is given as to the limitations which we labour under, owing to the inferiority of our teaching of classics in our secondary schools Grave as are the defects of our classical teaching, they are quite overmatched by the defects of our teaching in science. We have not yet educationally recognised how lopsided is a system which takes no adequate account of the contributions of scientific knowledge to the world's movement. It is over 30 years ago since Thomas Henry Huxley, in his address as Lord Rector of the University of Aberdeen on "Universities: Actual and Ideal," drew attention to the modifying influence of the study of classical literature and the physical sciences. Speaking of the latter, he said:—"Physical science...on the other hand, was (in certain quarters) regarded as an irreconcilable enemy, to be excluded at all hazards,"[1] and he recognised the actuality and disastrous influence of this spirit.

"People do not always," he said, "formulate the beliefs on which they act. The instinct of fear and dislike is quicker than the reasoning process; and I suspect that, taken in conjunction with some other causes, *such instinctive aversion is at the bottom of the long exclusion of any serious discipline in the physical sciences from the general curriculum of Universities; while*, on the other hand, *classical literature has been gradually made the backbone of the Arts course.*

"I am ashamed to repeat here what I have said elsewhere, in season and out of season, respecting the value of Science as knowledge and discipline."

We are still in the grasp of this conservatism. And its effect is that while Science is absolutely necessary, not only for the whole range of our commercial and industrial effort, but even for an intelligent knowledge of the world's movement, it is comparatively ignored in our curriculum. The result of this is that at every stage of practical education one is met by the serious want of preparation. Over and over again, too, our administrators often without scientific education, fail lamentably to grasp its import, or if they recognise that it has some real and important function, they do so without earnestness, and without apperception. It is a purely academic admission. And this is the reason why the United Kingdom is admittedly backward as regards technology.

To this point we shall return in the next section. At present the matter for observation is that we do not properly prepare our pupils for the higher or special branches of education, and so we limit seriously the efficiency of the higher institutions.

9. *Absence of adequate Recognition of the Importance of Science.*—Throughout the English nation, those who politically rule our destinies, have generally been educated under the influences of the "Arts" Course. This has certain consequences which we shall do well to recognise. The literary schoolmaster, instead of perceiving how want of knowledge of the subject-matter of science limits him, often plumes himself thereupon, and not unfrequently entertains a somewhat thorough-going contempt for the physical sciences. As is well known, the English Public School boy often entertains a real, even if generous, contempt for those of his school-fellows who have any liking for "stinks," *i.e.*, Chemistry, etc. Public men in England of really liberal education, who have learnt something of both branches of human knowledge, and who are in addition men of the world and men of affairs, have recognised the disastrous consequences of this tradition to the British race, and are strenuously endeavouring to bring about a perception of the necessity of liberal curricula properly so-called, including the natural sciences.

When one recognises the tremendous range and astonishing amount of discovery which has characterised the century just closed, when one considers how human life has been intensified thereby, when one takes account, moreover, of the fact that almost every species of human activity is generally directly, and always indirectly, dependent upon the contributions of science, it seems little short of amazing that persons of one-sided education should oppose themselves to liberal culture, *i.e.*, culture in regard to all things which concern the human being and concerns also his relation to his environment.

It is with a delicate irony that Huxley referred to those who represent one side only in the following terms:—

"*Thus I am very strongly inclined to agree with some learned school-masters who say that, in their experience, the teaching of science is all waste of time. As they teach it, I have no doubt it is. But to teach it otherwise, requires an amount of personal labour and a development of means and appliances, which must strike horror and dismay into a man accustomed to mere book work;* and who has been in the habit of teaching a class of fifty without much strain upon his energies. And this is one of the real difficulties in the way of the introduction of physical science in the ordinary University course, to which I have alluded. It is a difficulty which will not be overcome, until years of patient study have organised scientific teaching as well as, or I hope better than, classical teaching has been organised hitherto."

It is, to use a phrase of Huxley, this fact, viz., that "the mass of English University men remain in their present state of barbarous ignorance of even the rudiments of scientific culture" that Science has been neglected both in our primary and secondary schools, and that it has received, even up to the present time, no adequate recognition in the Arts Course of the University.[2]

It is well when the student can obtain his science in the secondary school, so that when he enters the University, he may elect either to extend his knowledge in that direction or to devote himself to general studies. And the proper completion for an Arts Course in a University would, it is submitted, involve, in regard to Science, a reference to its more general significance and to the philosophy underlying its fundamental conceptions. It is important that the philosophy should be based upon a real knowledge of fact. From the standpoint even of purely general culture there ought to be some experimental acquaintance with the subject-matter of the sciences.

It is pitiable, when a University must occupy its professorial staff in teaching its students the elementary conceptions of, for example, Physics and Chemistry, and we cannot hope to reach the plane of European education until the necessity of so doing is removed by more advanced teaching of that character in the secondary schools. The limitations to which the University is subject through the want of

[1] Science and Culture: Macmillan and Co. London, 1882, p. 42.
[2] An initial step tending to change this has already been taken by the University authorities.

of preparation of those who enter its portals, prevent us from realising how valuable a factor it might become in the higher effort for our people. As things are at present, much valuable time and effort are frittered away upon merely elementary teaching, and upon teaching on a plane which can only be regarded as appropriately belonging to a secondary school. The professorial staff of our Universities, owing to this, have not an adequate opportunity of doing that original work which is the very life of a true University. Their time is so largely occupied by helping to make good the defects in our secondary system. Thus the University charged with this lower grade teaching does not attain to its normal dignity. This question demands a fuller and independent discussion. It is sufficient here to merely indicate it.

As soon as we endeavour to make our technological education what it ought to be, we shall recognise the same limitation, in fact, it is already realised by every educationist in the State worthy of the name. In comparing the success of the efforts of the teachers of our technological institutions with that of other countries, it is essential to bear in mind that here our staff is working under great disadvantages and that the pupils who enter our technical and agricultural establishments are not only *ill*-prepared, but in many directions they have no preparation at all.

This question will be extended when technical and agricultural education are discussed. A single indication will suffice to illustrate what is meant. A lad entering a continuation school in Europe to learn a trade, has already received elementary instruction qualifying him to properly appreciate the special teaching, and before entering the National Agronomic Institute of Paris the student is required to have passed through a well-developed course in Natural Science, which will be considered later on in the Commissioners' report.

10 *Conclusion.*—The whole difficulty of perfecting secondary education lies in the fact that it has developed in New South Wales without definite organisation, and has merely reproduced the types to be found in the United Kingdom. The absence of organisation and the existing types of secondary education in the mother country are unsatisfactory, and this fact has been recognised by English educationists generally, and is strongly animadverted upon in a Commission Report on Secondary Education. Definite curricula for each necessary type of secondary, and thorough co-ordination of all forms of education, are essential to improvement, and the method of professionally qualifying secondary teachers must be radically altered. That teachers may discharge their duties satisfactorily, it is necessary that the scientific equipment of secondary schools be not only more complete, but developed also on an altogether larger scale, and the teaching both of science and other subjects should be invariably by specialists restricted to cognate groups. The grade of the teaching should, and, contingent upon the establishment of better elementary education, could be easily advanced.

Thorough reform can be brought about only by creating an ideal of secondary education to which the existing forms should be gradually conformed. The most important first step toward initiating this reform is the *registration of secondary teachers and of their professional qualifications.*

The creation of a definite aim-point and a scheme of approach thereto is also essential to any real progress, and to thorough co-ordination of our educational system.

CHAPTER XXXI.

CHAPTER XXXI.

Recent Educational Advance in Japan.

[G. H. KNIBBS.]

1. *Introduction.*—For some years past the Japanese have sent the ablest students in their own schools to the Higher Schools and Universities of other countries to acquire both general and special knowledge. They have studied not only curricula, but also methods of teaching subjects. *Educational merit has been rewarded in the Japanese lower schools by enabling the students to attend the Higher, and if more than ordinary ability were also shewn in the latter the Government has rewarded it by sending the student to study in foreign countries.* This régime has brought forth remarkable educational fruit.

The political history of Japan has revealed the fact that the Japanese are capable of great devotion to their country, and their patriotism has led to extraordinary examples of self-abnegation. The assiduity of the Japanese, and their conspicuous ability as students, has been noticed by almost everyone with whom they have come in contact. No doubt the facts just mentioned have contributed largely to the Japanese freedom from insular prejudice, and in the development of their educational system they have been willing to include anything which seemed excellent. The results exhibit in the most striking way the immense value of a truly liberal spirit and the importance of eclecticism in shaping a policy of educational development. The Japanese educational achievements are little short of amazing, and reveal not only what is possible to a people who are *educationally in earnest*, but also the serious danger which exists for those who are *educationally indifferent*, and who are content with indifferent methods and with educational inferiority.

Owing to the urgency of reform, and the desire on the part of the Government to take action as speedily as possible, the Commissioners were not able to visit Japan. Nevertheless, through the courtesy of the Japanese Consul-General in Sydney they are able to afford some information with regard to Japanese education.

It may be mentioned also that the Japanese Government very courteously transmit to the Royal Society of New South Wales the scientific publications of their Universities, and as a consequence scientific students are adequately informed as to the high merit of original Japanese researches in various branches of Science.

The Commissioner writing is also under obligation to Mrs. J. R. Wood, of Jesmond House, Newcastle, for information respecting the Kindergarten and Primary and Higher Schools, and their recent progress.

2. *Recent Educational Progress in Japan.*—As already stated, the educational progress in Japan is remarkable. Their system is founded on a kindergarten commencement, and the development of their schools has won the admiration of all who have seen them.

Each year substantial advances and modifications are being made, as the following quotation from the Report of 1901–2 (published 1903) will shew:—

"With regard to secondary education, a revision was made of the paragraph on *mathematics* in the Regulations for carrying out the Imperial Ordinance relating to Middle Schools, and the number of hours of instruction for certain subjects of study was in some cases increased, and in others decreased, so as to secure a better distribution of hours, the said revision, together with that of two or three other paragraphs, being made after carefully examining the practical results of the above regulations. *With regard to the standard as well as the method of instruction, a great diversity has hitherto prevailed between cities and rural districts, thereby causing not only a want of uniformity, but there has also been the danger of negligence and disorder in conducting instruction.* For this reason the principal points to be observed in teaching middle schools were minutely defined, and notification sent to the local governors in order to establish a fixed standard for effectual instruction in each subject, and to systematise the middle school courses throughout the country. As middle schools, normal schools, and higher female schools have increased in number and expanded in their organisation, the want of competent instructors for these schools has been keenly felt. Attempts have already been made for the speedy training of instructors, and in order to meet the urgent demand for the same, the *Hiroshima Higher Normal School* is to be opened in 1902, one year earlier than had previously been determined. Regulations were also established for special institutes for the training of instructors. According to these regulations, the courses in the Imperial University of Tokyo, physical chemistry in the First Higher School, mathematics in the Second Higher School, and English in the Third Higher School and the Tokyo Foreign Language School, under the name of Special Institutes for the Training of Instructors numbering one to five, the same to be opened in the ensuing statistical year. As regards the examination of the physique of applicants for admission to the Higher Normal School, the Higher Normal School for Females and other Normal Schools, a new standard was prescribed, no definite standard having yet been established, the object being to secure a stricter examination of the physique of such candidates. During the present year a university preparatory course was opened in connection with the Seventh Higher School (Zoshikwan), and the medical departments connected with the higher schools from the first to the fifth, were each organised as independent institutions under the name of special schools of medicine; while the law and engineering departments connected with the Third Higher School were abolished. Graduates of higher schools desiring to enter universities, particularly

particularly those wishing to study medicine, have so greatly increased in number year after year that those attending the colleges of medicine in the Tokyo and Kyoto universities have already exceeded their capacity as previously fixed, so that the establishment of a new college of medicine somewhere in Kiushiu is now under serious consideration, in order to meet the greatly enlarged demand of the public. During the present year, regulations relating to students in foreign countries were revised, prescribing strict examination of their physique, and introducing some changes in regard to the amount granted them for expenses, besides some new regulations relating to the supervision of those students. A normal course having been established at Government expense in the Tokyo Academy of Music, to be opened in the year 1902, regulations relating to the duties owed by graduates were prescribed, imposing on them obligations similar to those to be discharged by graduates of ordinary and higher normal schools. New regulations were established for the special admission of foreigners to schools under the control of the Department of Education, and those prescribed in the previous year for foreign students or pupils committed by their respective Governments to the care of such schools were abolished. According to the old regulations, the admission of foreign students to these schools was granted only through the Ministers or Consuls representing their respective Governments in Japan. But now greater benefits are conferred upon the applicants for admission by the new regulations, which require letters of recommendation either from the Foreign Department or the Japanese Legations in foreign countries, or from the Foreign Legations in Japan. As regards technical education, it was proposed that a *higher technical school and a higher commercial school* should be established; and in order to encourage the establishment of local industrial schools, an increased grant was promised from the National Treasury. Regulations were made relating to schools for aquatic productions, defining the system of instruction to be observed. Those for *supplementary schools for technical instruction* were also revised, thereby promoting the further development of this branch of education. In regard to schools for aquatic productions, the regular course of study was fixed at three years, but permission was also given to extend it anywhere within the period of from three to five years, according to local circumstances. Candidates for admission must have attainments at least equivalent to those who have completed the higher elementary school course of four years. The course of study includes fishing, zoochemy, and pisciculture, besides an expedition to distant waters extending over not more than three years for the benefit of those intending to engage in such pursuits. According to local conditions, the subjects of study for the course of aquatic productions may be established conjointly with those for nautical as well as other technical schools, so that the results of education of this description may thus more easily be attained. Supplementary schools for technical instruction with suitable courses of study may also be opened at such times as will best suit local convenience. As regards the qualifications of candidates for admission as well as the methods of establishing such schools, the regulations are purposely flexible, the chief object being to impart such technical instruction as is adapted to the trades to be pursued, and to give them such knowledge and skill as are necessary for practical purposes. As to such matters as the object of such schools, the steps to be taken toward establishing them, the distribution of the subjects of study, the fostering of moral sensibilities, the items of expenditure, etc., minute suggestions were made to local governors. A number of new schools having been added to the list of institutions under the control of the Department of Education, official regulations were revised, and an Imperial Ordinance relating to the number of officials for these new schools issued. These new schools were the *Hiroshisma Higher Normal School*, *the Morioka Higher School of Forestry*, *the Kobe Higher Commercial School*, *the 7th Higher School* (*Zoshikwan*), *and the Kyoto Higher Technical School*."

This will give a general idea of Japan's educational activity; and this is due to the fact, already referred to, that the Japanese study very thoroughly the progress of education in other countries. Among works published by the Japanese Department of Education are, according to the 1901–2 Report:—

"Female Education in France," "Female Education in England, the United States of America and Germany, with a supplementary account of the technical education of females in Europe and America," and "Treatise on Technical Education." The following three works, viz., the "University Systems of Various Countries in Europe," "A short Account of Universities in Various Countries of Europe," and "Laws and Regulations of the German Universities," have been either compiled or translated and published, to furnish materials for investigating the University systems. In a word, the measures hitherto undertaken by the Department have been followed up and carried into effect during the present year, always keeping in view the progressive destiny of the nation. A brief account of educational affairs distributed under their respective heading is given.

The following remarks from the general summary of the Educational Report are well worthy of attention:—

"As regards *secondary education*, the development has been quite equal to that of the previous year, middle schools and higher female schools having been established everywhere, and fully equipped in accordance with regulations for carrying out the Imperial Ordinances relating to these schools.

"*Technical education* has made very noteworthy progress during the present year. Strenuous attempts were made in many localities to pave the way for the promotion of various technical pursuits either by establishing or improving such institutions as suplementary schools for technical instruction, *agricultural schools*, *commercial schools*, *industrial schools*, *nautical schools*, or schools for aquatic productions, all suited to local conditions. Although this forward movement in technical education is doubtless due to the spirit of the times, still it may also be ascribed to the pains taken on the part of progressive men in the various localities who have interested themselves in a more complete organisation of this branch of education.

"As regards other schools, further improvements have been introduced into school management as well as into the method of teaching. Care has also been taken in selecting school books and charts and in securing thoroughness in carrying out school hygiene. All those measures which had been previously initiated have been followed up, in accordance with the laws and regulations already issued. *The people generally have also begun to attach more and more importance to education, and instead of complaining about heavy burdens they seem to contribute more willingly toward the funds for educational purposes.*

"Education throughout the country has been steadily advancing from year to year."

The *Kindergartens of Japan* are for children of 3 years of age up to the age of admission to the ordinary elementary schools. The latter are "ordinary" and "higher." The ordinary course extends over 4 years, and the higher course over 2, 3, or 4 years. Following on the elementary schools are the middle

middle schools. These have a 5-years' course, and a suplementary course of 1 year. Entrance takes place at 12 years of age at the earliest, and the pupil must have completed the second year course of the higher elementary school.

There are also eight *higher* schools, with courses specially preparatory for the Universities.

In the Colleges of the Universities there are now 18 foreigners, viz., 8 German professors, 3 from the United States, 2 from Great Britain, 1 each from France, Russia, Switzerland, Italy, and China.

3. *Technical Schools.*—The Technical schools of Japan are the following:—

(1) The Sapporo Agricultural School.
(2) The Higher Commercial School.
(3) The Tokyo Higher Technical School.[1]
(4) The Osaka Higher Technical School.

In the Tokyo Higher Technical School there are six sections, viz.:—

(1) Dyeing and Weaving.
(2) Furnace Work.
(3) Applied Chemistry.
(4) Mechanics.
(5) Electricity.
(6) Technical Designing.

The Apprentice school has two sections, viz.:—

(1) Woodwork—(a) Carpentry; (b) Joinery; (c) Wood-modelling.
(2) Metal Work—(a) Casting; (b) Forging; (c) Finishing; (d) Metal plating and lead working.

In the Osaka Higher Technical School there are three departments, viz.:—

(1) Mechanical Technology—(a) Mechanical course.
(2) Chemical Technology—(a) Dyeing; (b) Furnace work; (c) Brewing; (d) Metallurgy.
(3) Shipbuilding—(a) Hull construction; (b) Engines.

The course extends over three years in each.

Some details of some of these schools will be given hereinafter.

4. *Commercial Schools.*—An account of "Commercial Education in Japan" is given in the "Special Reports on Educational Subjects," vol. 8, pp. 555–567. London, 1902. It is by Mr. Zensaku Sano, and bears the date February, 1900. Mr. Sano was then Under-Director of the Higher Commercial College, Tokyo. On that date he wrote as follows:—

"There is a pestilent and wide-spread belief among the business men of Japan (I think it is also the case in other countries) that the graduates of commercial schools are no better qualified for actual business than those who have been brought up as apprentices in business houses, and hence commercial schools are useless things. The existence of a great number of people who harbour such an absurd idea in this day, in spite of school boards and the march of intellect, is something unintelligible. To say that the young men from commercial schools cannot compete with the apprentices of a business concern in drawing Bills of Parcels or in counting figures in the Ledger is tantamount to asserting that 'Dr. Linguist' who studied different languages at the Imperial University, cannot speak English as quickly as those interpreters of Yokohama, who have picked up their knowledge of English at *Hatoba*; his Alma-Mater is good for nothing!"

Since then matters have considerably changed, and students of the colleges are better appreciated.

The first commercial school was founded at Tokyo in 1875. The schools are of two degrees. Those of the first degree have a three-year course, which may be extended to a fourth year. The maximum number of hours per week is 33. The schools of the second degree have a three-year course at most, and not more than 30 hours study per week. The pupils of the first-degree school must be at least 14 years of age and must have passed through the *fourth* year of the higher primary school. In the second-degree school the pupils must be at least 10 years of age, and have passed through the ordinary primary school.

Besides these, there is a Higher School of Commerce, into which students cannot enter till they have attained 17 years of age.

The following will give an idea of the curricula:—

School of Commerce, 2nd degree.

Ethics, Reading, Writing, Composition, Mathematics, Geography, Accountancy, Elements of Commerce, Gymnastics.

School of Commerce, 1st degree.

Ethics, Reading, Writing, Composition, Mathematics, Geography, History, Foreign Languages, Political Economy, Law and Legislation, Accountancy, Merchandise, Elements of Commerce, Gymnastics. Other subjects may be added.

A preparatory course may be established in these schools, the duration of which must not exceed two years. The candidates must be at least 12 years of age, and have passed through the *third* year of the higher primary school.

Higher School of Commerce, Tokyo.

The preparatory course of one year is as follows:—

Subject.	Hrs. per Week.	Subject.	Hrs. per Week.
Commercial Morality	1	English, French, German	—
Japanese Writing	2	Chinese, Korean, Russian	9
Japanese Composition	3	Italian or Spanish	3
Mathematics	4	Gymnastics	3
Bookkeeping	3		
Applied Physics	2	Total	33
Chemistry	3		

The course on *commercial morality* is unique: it exists in no other school of commerce.

The

[1] In connection with this there is an Apprentice School.

The curriculum, in the course proper, is as hereunder:—

Subject.	Hours per Week.		
	I year.	II year.	III year.
Commercial Correspondence	2	1	—
„ Arithmetic	2	2	—
Book-keeping	3	2	—
English	6	6	6
French, German, Chinese, Korean, Russian, Italian, and Spanish	3	3	3
Mechanical Construction	1	—	—
Commercial Products	2	2	—
Industrial and Commercial Geography	2	3	—
„ „ History	—	—	4
Political Economy	2	2	—
Statistics	—	—	1
Finances	—	—	3
Civil Law	3	2	—
Commercial Law	—	—	4
International Law	—	—	1
Science of Commerce	3	6	—
Commercial Practice	—	—	8
Gymastics	3	3	1
Totals	32	32	31

In Commercial Practice the subject is divided into National Commerce and Foreign Commerce.

There is a *Professional Section* annexed to the Higher School of Commerce for students who desire to specialise, or who intend to enter the Consular service.

This advanced course lasts 1 year, and is as follows:—

Subject.	Hrs. per Week.	Subject.	Hrs. per Week.
Commercial Economy	4	French, German, Russian, Italian, Spanish, Chinese, Korean	3
Economic Geography	1	National and Foreign Commercial Customs	Various
Civil Law	2	Banking	„
Commercial and Maritime Law	2	Railroads	„
Public International Law	2	Mercantile Navy	„
Private International Law	2	Insurances	„
Constitutional and Administrative Law	3		
English: Diplomatic, Consular, and Commercial Phraseology	1		

The fees per annum are:—Preparatory course, 20 yèn[1] (£1 1s. 8d.); principal and advanced course, 25 yèn (£5 2s. 1d.).

Pupils who pass, and present a satisfactory thesis on one of the special subjects, receive a diploma. The last five subjects are special. There are bursaries for poor but able pupils.

5. *Commercial Museum.*—The commercial museum attached to the Tokyo Higher School of Commerce has a large number of commercial products, viz,:—

(a) *Industrial Products.*—Silk and silk goods, mats, lacquers, pottery, porcelain, bronzes, Cloisonné ware, glassware, paper and paper articles, leathers, and articles in leather, oils, waxes, and gutta-percha, dyes and dyeing matters, colours, chemical and pharmaceutical products, etc, etc.

(b) *Agricultural and Marine products.*—Rice and other cereals, teas and coffees, sugars, indigo, vegetable wax, caoutchouc, etc.; seaweed and other marine products.

(c) Mineral products, etc.

(d) Irons, steels, machine and building materials, articles of iron, cutlery, machines, weights and measures, bricks, tiles, stones, etc.; woods.

The object of this museum is to afford samples for demonstration in the lectures, etc., on commercial products, and to give business men opportunities for acquiring knowledge of materials and products, their price, their source, markets, etc.

It may be mentioned that the new buildings of the Higher School of Commerce at Tokyo cost 360,000 yèn, say £73,500. The area occupied is about 10 acres.

There are between 800 and 900 pupils in the school.

6. *Supplementary Professional Schools.*—The object of the supplementary professional schools is to call into exercise and to extend the knowledge already acquired; to give some idea of the skilled arts to children on their leaving obligatory primary education. The hours range between 4 and 20 per week, and the courses, as in Germany, are held during the afternoons, evenings, or on Sundays. The programmes include:—

Ethics, reading, writing, arithmetic, practical knowledge.

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[1] The value of a yèn is about 4s. 1d.

The subjects are chosen so as to suit local circumstances, viz. :—

(a) Industrial localities : Drawing, modelling, geometry, physics, chemistry, natural science, industrial undertakings, manual work, etc.

(b) Commercial localities :—Commercial correspondence, commercial arithmetic, commercial geography, merchandise, accountancy, synopsis of commercial laws and customs, politico-commercial economy, foreign languages.

The sexes are not together in these schools.

7. *Schools for Apprentices.*—Schools for apprentices have been established so as to give artisans theoretical and practical instruction in their calling. The pupils must have passed through the ordinary primary school, and be at least 12 years of age.

The curriculum embraces :—Ethics, arithmetic, geometry, physics, chemistry, drawing, and all matters relating directly to the callings of the pupils.

The course in ethics is obligatory ; but all other courses are optional. The courses last from 6 months to 4 years.

Boys and girls may receive instruction together in these schools.

8. *Technical Industrial Schools.*—The technical industrial schools have a three-years' course, which may be extended to four years. The programme includes :—

Ethics, Reading, Composition, Mathematics, Physics, Chemistry, Drawing, Gymnastics. To these may be added Geography, History, Natural History, Foreign Languages, Political Economy, Law and Legislation, Accountancy, etc.

The "practical" part of the course embraces the following sections :—

(a) *Construction.*—Trigonometry, surveying, applied mechanics, maritime and fluvial construction, railroads, roads, bridges, carrying out of various works, drawing, etc.

(b) *Metallurgy.*—Applied mechanics, instruments and tools, their manufacture, machine tools, motors, drawing, etc.

(c) *Naval Construction.*—Applied mechanics, instruments and tools and their manufacture, machine tools, motors, naval-architectural drawing, etc.

(d) *Electricity.*—Applied mechanics, instruments and their manufacture, electricity and magnetism, electrical apparatus, drawing, etc.

(e) *Carpentry* (Building).—Applied mechanics, civil construction, instruments and tools, history of architecture, organisation of work, perspective, drawing and painting, etc.

(f) *Mines.*—Geology, exploitation, forge, testing, applied mechanics, motors, plans, practical exercises in mines.

(g) *Dyeing and Weaving.*—Weaving, dyeing, applied chemistry, ordinary machines, analysis, drawing and painting, etc.

(h) *Ceramics.*—Manufacture of pottery, applied chemistry, ordinary apparatus, analysis, drawing and painting, etc.

(i) *Lacquers.*—Manufacture, history of the industry, painting, applied chemistry, etc.

(j) *Design and Drawing.*—Perspective, elements of anatomy, history of the arts, résumé of the history of architecture, drawing and tinting, elements of applied chemistry, industrial drawing, etc.

Candidates must be at least 14 years of age, and have passed through the fourth year of the higher primary school.

Preparatory courses not exceeding two years may be followed, and 30 hours per week.

The first school of the above kind founded in Japan was the "School of Arts and Manufactures" of Tokyo, organised in 1881.

All these courses are divided into two parts—one theoretical, the other practical. One or two illustrations will suffice :—

Course.	Theoretical.	Practical.
Ceramic Art	Mineralogy, applied Geology, Ceramics.	Faience, Porcelain, Glass-manufacture, Cement, Tiles, etc.
Electro-mechanics ...	Electro-magnetism, Mechanical manufactures, Applied Dynamics, Industrial Electricity, Motors.	Distribution of Electric energy, Electric Rail and Tramways, Electric Light, etc.

In the higher school of this kind at Tokyo the lessons are 39 hours per week. Pupils are from 17 to 25 years of age, and must either have been born in an industrial family or must affirm their fixed intention of following an industrial calling. He must have passed through a *secondary* school, and have passed examinations in English, mathematics, physics, chemistry, and drawing. If there be vacancies others may be admitted, who pass in Japanese and English, arithmetic, algebra, geometry, trigonometry, natural history, physics, chemistry, free-hand drawing, and fair-copy drawing.

The fee is 15 yèn (£3 1s. 3d.) per annum.

A certain number of pupils whose studies have been meritorious are allowed to proceed to a still higher course. The fee is 3 yèn (12s. 3d.) per month. Exceptionally good pupils have one year's fee remitted.

9. *Industrial Normal School.*—This school aims at preparing students for a professorship at the Industrial Schools, or the Apprentice Schools, etc. There are two courses—the complete and the abridged. They are as follows :—

Complete Course.—Six classes :—1. Wood-work ; 2. Metal-work ; 3. Dyeing and Weaving ; 4. Ceramics ; 5. Applied Chemistry ; 6. Study of industrial schemes. Course, three years.

Abridged Course.—Six classes :—1. Wood-work ; 2. Metal-work ; 3. Dyeing ; 4. Weaving ; 5. Porcelain ; 6. Lacquer-work. Course, one or two years.

Ethics, arithmetic, physics, drawing, pædagogy, and gymnastics, are also taught.

Candidates for the abridged course must be between 20 and 30.

The preceding sketch will give some idea of the scheme of preparation of the Japanese teacher in technology.

10. *School Expenditure in Japan.*—To form an estimate of the magnitude of Japanese expenditure on education the following table is compiled :—

Expenditure on Education in 1901-2.

Elementary schools	Yèn—29,815,717
Normal schools	3,021,043
Middle schools	4,921,424
Higher schools for Girls	1,314,939
Special schools	228,658
Technical schools	2,282,143
Schools for Blind and Dumb, etc., etc.	172,787
Miscellaneous	827,484
Total	Yèn—42,584,195[1]=£8,694,273

The total area of the school-grounds of Japan for 1901–2 was 11,820,687 *Isubo*, which, if we take, say, 1,200 *Isubo* to the acre, gives roughly, 10,000 acres.

11. *Conclusion.*—The preceding sketch is quite unworthy of the splendid effort of the Japanese Government to afford its subjects good educational opportunities. In addition to what has been referred to, there are the Universities of Tokyo and Kyoto, working on a high plane.

Japan is, educationally, very active, and societies for the development of education are scattered throughout the length and breadth of the land. They give lectures illustrated with the lantern, publish journals, establish libraries, organise educational exhibitions, and so on.

The *earnestness* of the attitude of Japan to education is worthy of emulation. It will be seen that, while she does not reproduce the system of any one nation in its entirety, she has borrowed elements from many, and aims at thoroughness.

[1] To approximately convert yèn into pounds sterling, divide by 5, and add $\frac{1}{50}$ of the quotient. This will give about hree figures correctly.

CHAPTER XXXII.

CHAPTER XXXII.

The University and its function in an Educational System.

[G. H. KNIBBS.]

1. *Introductory.*—To understand the significance of the relation of secondary to higher education, some reference is necessary to the place of the University. The pinnacle of every educational system is the University, which ideally is, and always ought to be, a focus of universal culture. Any conception of it, which makes it merely a kind of higher general or professional school, fails to take account of its essential character. To be normally constituted it must not only be the repository of the ever-increasing stores of human knowledge, contributed from all parts of the earth, it must also be the active centre of the highest grades of literary and scientific research. It is this feature which makes the University worthily fulfil the destiny implied in its name; which endows it with the power of stimulating intellectually; which gives it a characteristic influence of such great value to those who receive its benefits. It is not, or *ought* not to be, a mere degree-giving institution, nor socially a mere higher school.

No country in the world affords a more striking example of the significance to a people of *true* University education than that which Lord Palmerston referred to as a country of "damned professors." The achievements of these professors in the realms of literature and science have raised that country to the front rank of industrial and commercial activity, and according to a distinguished educationist of France, M. Ferd. Lot, *Germany has now "a supremacy in science comparable to the supremacy of England at sea."*

The University is largely dependent on the efficiency of the education which precedes it, on the work done in the secondary schools that prepare for it. In comparing the attitude of various countries to *higher education*, one cannot fail to recognise the incontestable educational advantages which are possessed by the citizens of countries which have a good and properly organised secondary system. On the other hand the citizens of countries which are under no pains to make their secondary schools excellent, are, compared with the former, in a bad way; and if education be a most important factor in national development, this observation should be accentuated. The efficiency of the University can be secured only through proper preparation to enter it: the culture which the University has to offer presupposes a disciplined mind in the student; and in strengthening the intellectual forces and developing the creative genius of a nation, success depends upon the atmosphere in the University. To inspire, its personnel must be engaged in something higher than giving instruction, viz., in materially contributing to the advance of human thought. To do this, however, clearly demands that the status of the student shall be that of a qualified and serious hearer, the proper attitude of whom the secondary school has assured.

It may be pointed out that the characteristic difference between the Continental and the English University is the plane of the routine work. No merely elementary teaching is done in the Continental University: that is relegated to the secondary and middle schools. To discharge this office presupposes, however, the existence of a well-organised and highly developed secondary-school *system*, with adequate equipments for the efficient teaching of the various subjects, and a *highly qualified teaching-staff*. These are a *sine qua non*, if the University is to attain to its highest and proper function.

The scheme of qualification of the Continental teaching-staff in secondary schools may be illustrated by the training for professorship in the German "Gymnasien" and "Realschulen," and by that for the professorate of the French "Lycées" and "Collèges."

As shewn in Chapters XXI and XXII herein, there is a thoroughness about the training of the German teacher which we shall do well to emulate, and which, if we do not emulate, will assuredly leave us perpetually their educational inferiors. *The teachers of Germany are not merely graduates of a University;* that in itself is matter of small moment; they are men of University training, who, after a very fine general education, have specialised in the subjects they intend to teach. It is the breadth and excellence of the general training, and the specialism developed on that foundation which give them such marked preëminence. It is impossible to contemplate the teaching power implied in such education and training, as the secondary teacher of Germany has to undergo, without realising that a nation, in which large numbers come under the hands of such teachers, must inevitably reflect their work. That that country is *rapidly* growing in power as a direct consequence of its school system is a truth to which the most violent prejudice can hardly make one oblivious.

Although this excellent education bears satisfactory fruit in a general way, it is in regard to its influence upon the highest forms of education that its consequences are specially conspicuous and worthy of attention. Somewhat less than half of those who pass through the higher secondary schools of Germany qualify for higher education in the final examinations. The majority of the latter then enter the Polytechnics and Universities, and they enter fully prepared for the higher work. They do not, as with us, go there to learn the very elements of the subjects taken up in the University. On the contrary, they commence their courses as University students really qualified by their school career to study in a responsible way and to profit by such teaching as a true University has to offer, viz., as to the drift of the most recent acquisitions in all departments of knowledge.

2. *The significance of Good Secondary Teaching to Universities.*—One has only to look at the lecture list of a Continental University to realise that the plane of the work is one which, with our relatively poorly developed secondary schools, we could not possibly touch. While brilliant students all the world over soon reach a high standard of work and effort, it remains true that even they must suffer, for the lectures given at a University have necessarily to take account of the state of preparation of the students attending.

attending. The grade of teaching in the secondary schools of New South Wales is such that *science subjects have to be taught at the University from the most elementary stages.* How the teaching of the classical and modern languages compares with that in Europe can be gathered from Chapter III hereinbefore. It will be seen that literature is not more favourably situated than science.

The reason of the difference is obvious: it is to be referred wholly to the difference in the training of the secondary teachers, and to the average grade of their attainments before they are considered qualified. This makes it possible to dispense, in the University, with work which is on the lower plane, and to prevent it from degenerating into a mere *teaching* institution.

The professional staff of a University in a healthy state of activity will be exercised in *research* rather than in mere preparation of lectures embodying instruction in the elementary stages of literature and science. Teaching, in the ordinary sense, is the work of the school rather than of the University: the spirit of study and research should find expression and embodiment in the life and activity of the latter. Thus one sees in Continental Universities many men who, as mere teachers of youths, would probably be regarded as failures, but whose power of work, and whose genius, are an inspiration to *students*, while their contributions to knowledge give them an enduring place in the estimation of those competent to appraise their value.

The attaching of importance in a University to the *power of teaching*, instead of to the *genius for research*, is, in itself, an evidence of the failure of our secondary-school systems. This is the very serious fact which *nationally* we have to face.

University professors whose time is frittered away by elementary teaching will never have that mental freshness and exhilaration which comes from the stimulus of the highest planes of human endeavour. Anything to which they may attain is attained at undue cost, viz., that of abnormally stimulated instead of purely spontaneous effort. The absence of a good secondary-school system not only wholly alters the intellectual atmosphere of a community, and lowers the plane of work and the influence of a University, it also lessens sympathy with higher effort. Let it be remembered that *it is absolutely certain that our University life and University effort will never bear comparison with that of a Continental University until the undergraduate enters properly prepared for the higher plane of work.*

Those who know anything of the interior of University life know also that every capable professor deplores the fact that he cannot lecture on the plane that he would desire. Hence he himself has neither the stimulus, nor is he as stimulating, as he would be under the continental system.

All this goes to shew that just as the kindergarten is the foundation on which the effort of the primary school will reach what is possible in the way of elementary teaching, and good elementary instruction furnishes the proper basis for a good secondary system, so in its turn good secondary instruction is a pre-requisite for the full participation of the benefits which a University *could* confer. Without it the University is inevitably degraded into a mere advanced secondary school.

There is another and special feature of our system which operates prejudicially from an educational point of view, and *which is certainly not irremediable*, viz., the scheme by which the right of entrance to the University is determined. The present régime is one which is injurious in its tendency, because it is inconsistent with *thoroughness.* Its detrimental effects will now be pointed out.

3. *Matriculation Conditions.*—It is admitted by all educationists that thoroughness is of very high importance, and that what is known as "*cramming*" is bad. It is also admitted by all who have given the subject serious consideration, and are under no solicitation of self-interest, that the only persons who can form an adequate estimate of a pupil's fitness to pass on to higher stages of education are those who can take proper account, not only of the way he passes an examination, but also of his daily career as a student, and who, by education and training, are qualified to form a judgment.

Matriculation, by passing an examination held by University authorities, cannot be compared for thoroughness with the method of the *Absolutorium* or *Arbiturienten Examen* of Germany or Austria, etc.

Contingent upon the employment of only qualified teachers for secondary teaching, the school examination would have the great advantage that it could take full account of the whole evidence of the pupil's career. To bring about uniformity of general result would demand also that the programme of school-work should follow a definite and well-organised curriculum. There might be as many types of curricula as one thought fit, but in each case the curriculum would have to be definite, and the work under various curricula fairly comparable.

The qualification to pass on to higher grades of education could under such a régime be far better dealt with than at present. It must be admitted that under our present educational system the substitution of the school-examination for the University matriculation is impossible. But, if we rightly direct our educational development, it will become possible. To appreciate the meaning of this we must not hesitate to recognise that, while our secondary education is unorganised, we *cannot* attain to the thoroughness of those countries where it is well organised. The best we can hope is that, in the few cases where the gift of genius makes its happy possessor almost independent of ordinary conditions, we shall be the educational equal of those who have been trained under better systems. National power, in so far as it is connected with education, will not depend upon the occurrence of occasional genius, but upon that educational atmosphere which fosters the works of genius, not only attracting it, but bringing about the natural consequences of its possession. To reap the national benefit, possible through the existence of such men as Hofmann, Pasteur, or Berthelot, a certain educational atmosphere is necessary, and the educational system must create this. It would be difficult to say how many millions of wealth have been created directly by the researches of these three men, to mention no others. German synthetic chemistry, with Hofmann at the head of one of its great departments—the manufacture of aniline dyes—was wrested from us, with every advantage on our side, with the markets already in our control, the raw material ours, through sheer force of better knowledge, and a happier atmosphere in which to prosecute scientific research.

What is here affirmed is that these are the fruits of the educational system, and that national wealth and even *national existence* may ultimately depend upon our position as regards educational thoroughness.

If then the matriculation method is not the best—and no one who has studied the different systems can possibly claim that it is—then *however long the period of transition must be, we must set our faces in the direction of change*, or face the alternative of national inferiority. Jingoism may blind us as to national issues and our national position, but it cannot avert consequences.

4. *The Defects of the Matriculation scheme.*—It has already been said that the matriculation examinations held by the University are unsatisfactory as compared with the system of holding official examinations in connection with the schools themselves. It is well known that private schools, however much the proprietors may wish to combat it, are forced to bestow special attention on those who intend to proceed to University examinations. In some instances the sacrifice of the inner welfare of the school as a whole is very *serious*. But success in University examinations is part of the public advertisement of private schools, and their financial position is, to a large extent, dependent thereon. It would be idle to deny that "*cramming*" in order to matriculate is almost characteristic. All study for examinations is more or less feverish, and an unhealthy feature, as compared with earnest and deliberate study aiming at the secure acquisition of knowledge.

If in secondary schools there were no unqualified teachers, if every secondary teacher were not merely a graduate of the University, but had in addition *specialised*, in the manner outlined in Chapters XXI and XXII, in the subjects he or she had to teach, then there would be more confidence in entrusting them with very considerable powers of examining, provided, of course, there were some assurance against pressure being brought to bear by parents and guardians. Thorough qualification of teachers, and a proper system of registration, would constitute the initial steps of a sound reform. England has already moved in this direction, but, so far, we have not. When we reach the point of having constituted the teaching profession a properly organised and professionally trained body, the final steps in removing the adverse conditions will be easy. It is an *astonishing* fact that, as a community, we think it necessary to limit the freedom in trade operations—*e.g.*, we grant licenses to plumbers—and yet we allow anyone to undertake teaching without any publicly established qualification.

So long as we permit secondary education to drift along without proper and definite organisation, so long will we pay the penalty that is being paid by the United Kingdom at the present time, of falling behindhand in the march of education, and that which depends on education.

5. *National attitude as to Examinations.*—The Arbiturienten examinations of Germany are recognised not only by the Germans themselves as very severe, but also by our own countrymen who have any knowledge of them. A man who goes on to the University has certainly proved that he is capable of profiting by attendance thereat.

No one will contend for a moment that matriculation in British or Colonial Universities is comparable to the Arbiturienten Examen. in thoroughness. There is one conspicuous consequence of this which should not be lost sight of, in endeavour after educational reform. It is this:—When the entrance conditions to a University are of such a character as will completely guarantee the educational status of the University student, there is not the same need to demand that later examinations shall be multiplied. Everywhere where students read to pass examinations, the work done tends to become mere memory work instead of deliberate and thorough study on special lines. In the German system the student has practically graduated in passing the Arbiturienten Examen. Afterwards more depends upon his special and detailed study of particular subjects and his capacity for original work. He has practically entered the plane of post-graduate work, and need not fear to devote himself thoroughly.

Under our system, the student who spends over much time in one subject may fail in another. A wise student will, therefore, excuse himself a little in any branch of knowledge likely to consume time, and shape his whole course so as to ensure a pass in all subjects. As things stand there is no help for this, and before any radical change can be made students will have to enter the University as well prepared as they are in Europe.

6. *Our National Attitude to Higher Education.*—Travelling as the Commissioners did from one eminent educational centre to another, the cumulative effect was impressive, and raised the question whether nationally we are seized of the need for a large expenditure for education. In the report already furnished something has been said of the incomparable superiority of the systems of training in Europe, of the fine types of schools built during recent years, of the excellence of their equipment with educational material.

The same feeling existed with regard to secondary schools. The *best* of our secondary schools cannot compare with the *average* secondary schools of Europe. The difference is so marked that one feels educational ideals have never been really awakened in us.

If this is true it is nationally serious, *and the duty of the Commissioners unreservedly to draw attention thereto.*

In "*Nature*" last year there appeared articles on the University in the modern state, which throw light upon the question of Germany's increasing supremacy in educational matters and the spirit of its effort.

When Napoleon crushed Prussia at Jena in 1806, Frederick William III founded the University of Berlin for the express purpose of endeavouring to retrieve by intellectual power what had been lost through physical, as mentioned previously in Chapter XIX, section 2. It is only when it is remembered to what terrible straits the country was reduced that one realises what a high appreciation of the significance of the highest planes of education for the development of a people was exhibited by the King and his Councillors.

That Germany has, all through, lavishly spent money to reinforce its brain-power will appear from the fact that "*the total sum spent by the British Government for the whole of the United Kingdom is less (even) now than the State endowment of one of the twenty-two German Universities was more than ten years ago.*"[1] This fact is so astounding that the statistics on which it is based are here given.

The fact must be taken to indicate the relative appreciation of what higher education can do for a nation. In a later chapter the matter will be again referred to, and discussed in regard to technical education.

7.

[1] *Nature*, vol. 67, 1903, p. 435.

7. *Statistics of expenditure on Higher Education in Germany.*—The following are the tabulated statistics above referred to :—

Ordinary State Endowment, year 1901–2.

Universities.	Sources of Income.						Expenditure.		
	Ordinary Total Income of Universities.	Foundation Funds, Fees, etc.	State Funds.	Other Sources.	Percentage of—		Salaries of Teaching Staff (including Lodging Allowance).	Various Personal Expenses.	Expenses connected with Material.
					Foundation Funds.	State Funds.			
a. Prussian Universities—	£	£	£	£			£	£	£
1. Berlin	123,839	16,782	107,057	...	14	86	44,504	23,769	55,565
2. Bonn	56,467	10,661	45,806	...	19	81	24,404	8,334	23,729
3. Breslau	48,203	3,454	44,749	...	7	93	21,845	7,927	18,430
4. Göttingen	57,363	36,487	20,877	...	64	36	24,601	10,248	22,512
5. Greifswald	35,807	21,833	13,974	...	61	39	14,605	5,870	15,332
6. Halle	62,880	29,596	33,284	...	47	53	20,791	9,015	33,073
7. Kiel	37,722	9,584	28,188	...	25	75	13,471	5,682	18,618
8. Königsberg	46,405	6,475	39,930	...	14	86	17,193	7,374	21,836
9. Marburg	38,872	8,743	30,129	...	22	78	15,068	6,732	17,070
10. Munster Academy	12,312	4,202	8,110	...	34	66	8,000	1,737	2,574
11. Braunsberg Lyceum	2,040	1,046	994	...	51	49	1,741	82	216
Altogether	521,911	148,863	373,098	...	33	67	206,223	86,770	228,955
b. Other than Prussian Universities—									
1. Munich	45,678	13,069	32,609	...	29	71	24,669	10,981	10,028
2. Wurzburg	36,246	15,707	20,539	...	43	57	14,099	11,316	10,831
3. Erlangen	31,722	6,813	24,909	...	21	79	11,591	10,149	9,982
4. Leipzig	99,373	21,439	77,934	...	22	78	27,162	43,917	28,293
5. Tübingen	44,068	5,309	38,759	..	12	88	13,669	12,602	17,798
6. Freiburg	25,984	3,996	21,893	95	16	84	13,021	3,538	9,424
7. Heidelberg	34,949	987	33,895	67	3	97	16,569	3,541	14,839
8. Giessen	32,749	9,530	23,178	41	29	71	11,988	2,358	18,402
9. Rostock	16,614	113	16,290	211	2	98	7,722	795	8,097
10. Jena	...	...	...	...	...	...	...	...	...
11. Strasburg	49,750	3,917	45,575	257	8	92	26,300	3,611	19,838
Non-Prussian Universities, altogether, excluding Jena	417,133	80,880	335,581	671	19	81	166,790	102,808	147,532
Prussian Universities	521,911	148,863	373,098	...	33	67	206,223	86,770	228,955
All the German Universities, excluding Jena	939,044	229,743	708,679	671	26	74	371,013	189,578	376,487

Shewing Extraordinary Expenditure 1891–2, *and increase of ordinary State Endowment since then.*

Universities.	Ordinary State Endowment, 1891-2.	Extraordinary Expenditure provided by the State in 1891–2.	Ordinary State Endowment, 1900-1.	Ordinary Endowm 1902-3.	Increase of Ordinary State Endowment in eleven years.
(a) *Prussian Universities—*	£	£	£	£	£
1. Berlin	107,057	61,714	130,743	142,155	35,000
2. Bonn	45,806	9,690	51,982	56,091	11,000
3. Breslau	44,749	38,900	57,435	57,435	13,000
4. Göttingen	20,877	6,260	27,403	30,414	10,000
5. Griefswald	13,974	5,762	20,490	23,925	10,000
6. Halle	33,284	15,919	51,666	54,419	21,000
7. Kiel	28,188	5,690	37,286	41,891	13,000
8. Königsberg	39,930	12,350	47,069	50,936	11,000
9. Marburg	30,129	2,660	36,255	38,931	8,000
10. Munster Academy	8,110	300	14,364	18,242	10,000
11. Braunsberg Lyceum	994	.....	1,989	2,990	2,000
Totals	373,098	159,245	476,682	517,429	144,000
(b) *Other than Prussian Universities—*					
1. Munich	32,609	13,932	.....	.....	.....
2. Wurzburg	20,539	375	.....	.....	.....
3. Erlangen	24,909	3,766	.....	.....	.....
4. Leipzig	77,934	.....	101,989	104,388	27,000
5. Tubingen	38,759	.....	49,703	52,234	14,000
6. Freiberg	21,893	7,825	28,555	30,955	9,000
7. Heidelberg	33,895	14,771	39,125	41,225	8,000
8. Giessen	23,178	6,990	37,480	42,188	19,000
9. Rostock	16,290	.....	17,812	.....	.....
10. Jena	.....	.....	.....	.....	.....
11. Strassburg	45,575	12,440	49,150	49,862	4,000
Non-Prussian Universities—Totals	335,581	60,099	323,814	320,852	.....

The article in "*Nature*," referring to this, says:—

"Our eleven Universities are competing with 134 State and privately endowed Universities in the United States, and 22 State-endowed in Germany. English private endowment is much less than 10 per cent. of the American endowment, and the German State gives to one University more than the British Government allows to all the Universities and University-colleges in England, Ireland, Scotland and Wales put together. *These are the conditions which regulate the production of brain-power in the United States, Germany, and Britain respectively*, so far as the Universities are concerned."[1] This fact, viz. that

[1] *Nature*, Vol. 67, p. 193, 1903.

that the total sum given by the British Government for Universities of the whole of the United Kingdom is less now than the State endowment for a single German University as far back as ten years ago, is ominous. There is evidence, however, that the belief that the weakness of our Universities must lead to national weakness in several directions, is, as the editor of *Nature* says, growing with a rapidly accelerating pace."

This was abundantly evident in the conversations which the Commissioners had with persons whose opinions were valuable because of their special knowledge and general qualifications.

"It may be long," continues the editor, "in this slow-moving country *before the influence of brain-power on history will be as fully recognised as the influence of sea-power* has been—thanks to Captain Mahan,—but undoubtedly *it will be bad for our future if much more time is lost.*"[1]

That Germany was right in believing that education and intellectual effort were the keys to solving questions of national power has been abundantly proved by subsequent history, and the Commissioners recognise it to be their duty to point out that, so far as it was possible to judge from a world-wide comparative study, the evidence that we should make a supreme effort to duplicate here the best forms of education is nationally of the most pointed character.

The preceding statistics shew that we must not exclusively rely on our own national—*i.e.*, English—ideas of education; on the contrary, *the sooner we take serious account of the nations that really make far greater educational efforts than we are accustomed to, the better.* The fact is recognised by educated men of England, who have any touch with the outer world, that our national ideal of education is far from satisfactory.

8. *Necessity for Larger Expenditure and more Complete Equipments.*—The step taken by Prussia in 1806 of endeavouring to overcome national disaster through war, etc., by increasing the opportunity for the *highest* forms of education, seems to have had a permanent influence upon the whole of Germany, leading them, not only to keep abreast of the rest of the world, but to advance beyond the rest of the world in many branches of scientific inquiry.

"The most remarkable thing about the German Universities in later years," says the editor of *Nature*, "*is the constant addition of new departments to enable them to meet, and even to anticipate, the demands made for laboratories in which each scientific subject, as it has been developed, can be taught on Liebig's plan—that is, by experiment, observation, and research.*"

This had its influence on the national policy, through the fact that the members of the German Ministry and Parliament, and the leading men engaged in industry and commerce, have been trained in State-aided institutions which were abreast of everything going on in the world. The case was different in England. Quoting again from the article in "*Nature*," it is stated that "in our case, in consequence of lack of funds for new buildings at Oxford and Cambridge, and, until not many years ago, the lack of other high-teaching centres, *our leaders have had to be content with curricula extant before Galileo was born, the teaching being, perhaps, not so good and the desire to learn generally less.*"

The spirit which is largely responsible for the state of things in the United Kingdom depends upon the influences which have operated upon those who have held the reins of power.

With rare and negligible exceptions they have been influenced, not by those contributing to the extensions of human knowledge characteristic of the nineteenth century, but by what are known as classical traditions. Classical lore has great attractions, and no one can come into close touch with ancient and modern literature, and the philosophy it contains, without a vivid realisation of its value for mankind. But the classical pedant who *assumes* that science is a pandering to materialism, and to mere utility, and who invariably knows nothing of its contents, who treats it all as if scientific truth simply expressed the *obiter dicta* of men who had departed from the higher way of classical erudition, is not a safe guide in national affairs, and his apparently invulnerable ignorance as to the significance of the modern aims and acquisitions of the human race, makes his control nationally dangerous.

Classical training that is uncorrected by some real acquaintance with science, undoubtedly leaves its subjects without any apperception as to the significance of the marvellous extension of the knowledge of Nature's resources, which, through entire change of the scheme of investigation, has been attained, and which reinforces human power, and the intensity of human life.

English leaders have, in general, had the exclusively classical training, and science to them has been "stinks." Thus, one is astounded in comparing the scientific institutions of England with those of Europe at the relative limitations to which we are subject; and the reason is obvious. The classic regards a *library* as the greatest possession, and as the necessary equipment of culture. The scientific worker regards the library as an adjunct, and the laboratory properly fitted for research into the unknown secrets of Nature, as an essential to progress. *The classic venerates erudition; the scientific worker reserves his admiration for those who discover important truths.*

So far, we have in this State been largely under the same influences which have determined English ideals of education. Hence we have no idea of embarking upon expenditures of the magnitude that is characteristic, say, of Germany. From English standards our laboratories are good; but in creating an educational ideal, it will never do to make present English standards our aim-point. Like Japan, we must be *eclectic*, and endeavour to make our aim-point represent the best that can be derived from a comparative study of the higher education of every country in the world. *That is to say, our ideals must be those toward which English educationists are advancing.*

Another thing that we must recognise is that the University that fails to equip itself for research of the highest order in all departments, does not adequately provide for the highest type of stimulation of the citizens of the State.

We have done well in Sydney to keep for the present the more practical departments of professional education in the University itself. They cannot be regarded, however, as in any way comparable in efficiency to the University and Polytechnic equipments of Germany, from the teaching standpoint, and still less from the standpoint of research. Research is expensive and needs liberal endowment. *In Germany those responsible for the wellbeing of the State are as earnestly engaged in increasing the efficiency of the Universities and Technical High Schools* (Technical Universities)[2] *as they are in developing their navy*, and, as is well known—and is in fact publicly declared,—the latter is with a view to ultimately becoming the greatest sea-power.

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[1] *Nature*, Vol. 67, p. 193, 1903.

[2] These must not be confounded with our Technical Colleges. The plane of work in the Technischen Hochschulen of Germany is *incomparably* higher.

It is quite certain that we shall not be able to compete educationally with Germany, unless totally different notions as to the necessity of university endowment prevail.

"In Britain," says the Editor of *Nature*, "there is no (adequate) concern shewn by our Government and politicians as to the *real* sources of *national* brain-power. . . . . The State, while *it allows Universities to remain inefficient, as if it were a matter of indifference whether we fail in brain-competition with foreign countries or not*, does really concede the principle of State aid."

Its present contribution to Universities and Colleges is said to amount only to £155,600 per annum, made up as follows:—

4 Universities in Scotland		£72,000
3 „ in England		14,800
1 „ in Wales		4,000
13 Colleges in England		26,000
3 „ in Wales		12,000
3 „ in Ireland—Consolidated Fund, salaries, professors, etc., scholarships, prizes, etc.	£21,000	25,800
Grants in aid	4,800	
1 College in Scotland		1,000
Total		£155,600

In this State we are proceeding upon lines substantially identical with those of England, and our internal organisation is modelled thereupon. But these lines will *never* admit of our students becoming the peers of European students, not only because of the limitations of our secondary schools, through which students come to the University nothing like so well prepared as they do in Europe, but also because our equipments and our professional staffing are not comparable.

Instead of having several professorates in Chemistry we have but one, one Professor of Physics, one of engineering, and so on! But for one professor to attempt to treat the whole range of each of these subjects is the reverse of satisfactory, and can only lead to our teaching being exhausting to the professorial staff, if there be any attempt to keep in touch with the highest planes of work.

Our system is incompatible with a high degree of specialism, and therefore with *thoroughness*, and until students enter better prepared, and the *intense activity* is characteristic of research rather than, of what ought to be regarded as secondary teaching, we shall not be in the front rank of University effort nor will the reaction of the University on our national power be comparable to what it is in the great countries of Europe.

9. *Need for Comparative Study of University Systems, and of the Relation of Secondary Schools to the University.*—Our real need is a complete revision of the whole scheme of secondary education, and of the connection between it and the University. Anything short of this is *nationally inadequate.* Our University needs to be remodelled on lines which will give results similar to those yielded by the German University. The English examination system can easily be abandoned when *entrance* to the University is practically comparable to graduation as at present; then the "*student freedom*" of the German University can replace the compulsory attendance characteristic with us. Instead of lecturing on the plane of higher secondary school work, and teaching science that is altogether too near the elementary stage, the lectures can be advanced to those characteristic of the Continental University.

Not to do this will be to remain, as we are, inferior in our educational system—an inferiority which the trend of movement in the modern world marks as fraught with national peril, which menaces most seriously our national prestige, and which may, at any time, be responsible for the gravest of all national disasters.

In submitting conclusions as to the type of reform which is desirable in our University, it is to be remembered that some will be possible *only after radical reform of our Secondary Education.* The progressive spirit is developing, and the University can do much to assist the advance of the secondary school régime.

10. *Conclusions.*—The conclusions which are pointedly indicated are the following:—

(1.) The University needs to be more vigorously developed and to be better equipped for original scientific research to take an equal place among the best institutions in other parts of the world.

(2.) Many professorates could be subdivided,—*e.g.*, physics, chemistry, engineering, etc. The subjects are too wide, whatever the genius of the possessor of the "chair."

(3.) Subject to substantial reform in the secondary teaching of the State, it would be an advantage if the entrance into the University were at a more advanced stage.

(4.) The absolute freedom of the student as to attendance at lectures, etc., is, subject to entrance conditions as severe as the Arbiturienten-Examen of Germany, etc., incomparably more stimulating than the régime of compulsory attendance.

(5.) The present constitution of secondary and University education is not adequate to enable our students to rival those in many European Universities

(6.) Neglect of the highest type of University training involves degradation of national power.

(7.) A comparative study of the University systems of the world, with a view to ultimately remodelling our University, is a matter of high importance.

(8.) We should not wait for the remodelling of the Universities of the United Kingdom, but develope our own plan of reform, since they are hampered by the conditions of secondary education.

(9.) Unless the University, when remodelled, influences our national traditions and educational policy, so as to ensure public recognition of the value of the highest planes of education, we are certain to be beaten in industrial and commercial effort since it will be less wisely directed, and since the aid which science can render, will not be so fully available in our case.

(10.) The history of education in America and Germany has revealed the fact that the national significance of education is unparalleled.

It should be added that it is the intention of the Commissioners to discuss more fully the question of University Reform. What has been submitted is little more than necessary to explain the significance of the reform of secondary education.

CHAPTER XXXIII.

CHAPTER XXXIII.

The Path of Reform in Secondary Education.

[G. H. KNIBBS.]

1. *Introduction.*—The principle to be applied in comparing any educational system with our own is to ask whether, under the former, we could reasonably expect better results than from the latter. And the answer will lie in the response we are compelled to give to such questions as the following, viz.:—

(1.) Are our schools better equipped for every form of teaching than they are elsewhere?
(2.) Is our school hygiene more satisfactory?
(3.) Has it a better curriculum?
(4.) Are our teachers better professionally educated for their work?
(5.) Are the conditions of teaching with us such that the teachers themselves are something more than mere disciplinarians and pædagogues?
(6.) Have they opportunities for and are they expected to do original work such as will make them the highest form of teacher?
(7.) Are the various elements in education better co-ordinated with us than they are elsewhere, or not?

It is in the answer to such questions as these that we can learn where we really stand. The answer we shall shew is not favourable to education in this State.

2. *The need of Reform.*—The serious defects of our educational system as compared, for example, with that of Germany, have their origin in absence of system and lack of method. *There is no organic unity in our education.* Notwithstanding the more hopeful state of things which has been brought about in England by the better training of primary teachers, by the registration of secondary teachers, and by increased facilities for the professional education of the latter, it would be idle to pretend either that English education is organised or that it is methodically developed in the sense that it is organised and developed in Europe. It is, for example, not possible to proceed from one part of the country to another and maintain the continuity of instruction, as in Italy, France, Germany, and indeed the greater part of Europe.

This want of organisation in English education reacts on our educational traditions. We do not even recognise how serious a defect it is, nor how disastrous are its consequences. Its influence is prejudicial from the lowest to the highest form of education, yet there is no public feeling that such a state of things is educationally intolerable, and cannot be allowed to continue.

It will be a tedious and difficult path to attain to the state of organisation by which alone the general educational scheme can be perfected, as it is in (say) France or Germany. We have a long way to go before the professional training of the secondary teacher of the United Kingdom will compare with that of his German colleague. (See Chaps. XXI and XXII herein.)

"How can we adequately realise the defects of our educational system" is a question which may well be asked. The preceding chapters have attempted to afford the opportunity for an impartial review of educational method and organisation in other parts of the world so that they may be compared with our own. The comparison can lead to but one conclusion, viz., that in every grade of education we are so far behind hand that thorough and indeed *radical* reform is necessary if, *as a people*, we are to be equally well educated with other nations.

3. *The Urgency of Reform.*—An abstract admission of the necessity for reform is not adequate. We need nationally to recognise that the interests at stake are colossal, and that educational inferiority is a danger, the seriousness of which must be great, and may be critical. That it is far-reaching is obvious. We are dealing now mainly with secondary education. But not only is secondary education defective; there is, as pointed out already, no branch which does not need reform. At each stage we find it limited by the defects of the education preceding it. The elementary school does not achieve what is possible because of the lack of kindergarten, and because of prevailing infant-school methods and the imperfect training, or absence of training of teachers. The Higher Primary school is less effective because of the condition of the elementary and lower primary schools. The Secondary school is defective because in our educational methods there is no clearly defined conception as to the difference between higher primary education and the lower grade of secondary education proper. With us, youths enter the University even from the primary school, after having been "crammed" for matriculation or from a secondary school, the education in which is but little better than it is in the primary school, except perhaps in the matter of ancient languages.

The reform in secondary education is urgent also, because primary teachers, to be equal to primary teachers in Europe or in those parts of the United States which are worthy of being taken as an example, must come under the influence of secondary education.

The reason why the industrial effort of Europe is well directed is because the primary education is good. It should not be, and in Europe *is* not, mixed up with secondary education. A hybrid system is a disadvantage. Nevertheless, the primary teacher will not discharge his task properly unless he could under the influence of secondary education, as he does in Europe. His instructors must be men above his own grade: the toning up influence must come from the higher forms of education, and unless the teacher comes under these influences he is liable to steadily deteriorate, as was shewn in the interim report.

Reform in secondary education is urgent, too, because the results being reached in other parts of the world are better than are being attained here. The higher grades of industrial and commercial effort depend upon good secondary education as a preparation. That the secondary schools of Europe are quite different from those here may be seen by reading the details of the curricula, and by considering the character of the professional training of the teachers. It cannot be doubted that the secondary schools of Europe are excellent institutions. That they aim at a higher class of work is shewn by the fact that they practically *graduate* their pupils, the final examination being comparable with graduation rather than with matriculation. This transfer of the baccalaureate (graduation as a bachelor) to the secondary school has greatly dignified the work of the University, while it has enormously raised the calibre of the secondary school itself. With us *the plane of work in the University is lower than it should be.* In this State that institution has, perforce, to fritter away time on much that is essentially only secondary teaching. As in the English Universities, so with us, it is found that the students have been badly taught in science. It has been said by eminent English authorities that it is often questionable whether it would not have been better for the students to have taken their whole course in the University rather than to have had to unlearn the questionable "science" they had acquired.

When a University is loaded with elementary teaching, it is quite impossible for it to reach the general plane of effort characteristic of a Continental University. One need only read the lecture lists posted in the Universities of Europe to realise the difference in the character of the work undertaken in a University that has to make good the deficiences of secondary education, and in one which commences its task with properly prepared students.

Reform is urgent also, because we have yet to learn that the power of creating wealth can be enormously enhanced by a sound education. If we recognised clearly that national prestige and vigour depend as certainly upon the excellence of our educational system as they do upon our fleet, we would probably be prepared to make the necessary financial effort to establish it on good lines.

European countries have deliberately expressed the opinion that the two things are related. The recent Mosely Commission in England has done the same. Experience teaches it also.

4. *The difficulty of Reform.*—In regard to the difficulty of necessary reform, and the practicability of any suggestions in regard thereto a word of warning is imperative. It is, of course, true that *instant and thorough reform is not a possibility in any country. By no effort, however great, can an ideal educational system be developed in a few years.* nor is mere lavish expenditure of itself sufficient.

It is equally true that the educational system of each country must, in some measure, conform to national idiosyncrasy. Sometimes, however, these facts are invoked to shew that it is impossible to make educational machinery as thorough and efficient in English-speaking countries as it is in countries that are subject to military methods or to military despotism.

The limitation does not really lie in that direction. It most assuredly does not depend upon the difficulty of thorough organisation in a country of free institutions, but almost wholly upon *relative indifference to good education, a fact unmistakably testified by want of earnestness in educational effort, and by comparative niggardliness in educational expenditure.* One has but to compare school buildings and school equipments generally in Europe and here, to recognise this. It is seen also in the *intense* and widespread interest manifested in educational matters in Europe and America, and the relatively *slight* and restricted interest in England and the Australian States.

Let us compare our expenditure in education with such a country as Japan. For elementary schools, normal schools, middle schools, higher schools for girls, special schools, technical schools, schools for the blind and dumb, etc., and those of a miscellaneous character, Japan in 1901–2, spent no less than £8,694,273

On the higher School of Commerce of Tokyo alone the expenditure for the same year was £73,500.

Any resentment of the above indictment can arise only from ignorance of the facts, facts that must resolutely be faced, *unless*, in the words of the London Technical Education Board's report, *we are prepared to submit to national decay.*

Perhaps one of the greatest difficulties in the way of reform is the confident opinion entertained by many otherwise able critics that there is no necessity for special educational effort, and that *we can get along very well without an excellent system of secondary education.* One hears it alleged that higher education merely multiplies the class that is already too numerous; that it creates distaste for a practical life, and for engaging in such pursuits as are directly connected with primary production. To such persons, strenuous effort toward improving secondary education appears useless, or at best, misdirected primary education and industrial education properly demanding the major part of our attention. With this view all educationists are, of course, at issue.

5. *Failure to recognise the necessity for the organisation of all grades of Education.*—The significance for a people of higher primary and secondary education, is, as we see, by no means so clearly perceived by those who have not thoroughly studied education, as is the importance of its elementary stage. This arises from want of recognition of the fact that the efficiency of those who direct human activity, and who influence the lower forms of education, is of the highest importance, though they be relatively few in number. The one cannot be brought to perfection without the other. For example, the success of the movements, the herculean labours, the splendid sacrifices of a whole army, depend not only on the loyal work of each unit, but also upon the wisdom and skill of the directing intelligence. And so it is in the ordinary affairs of life.

The success or ruin of a great industrial undertaking, depends not only upon honest labour upon the part of those who carry out each branch of its effort, but also upon the competency of the organisation thereof. In Europe it is recognised by all educational authorities that a national educational system cannot neglect the education of the few, on which the efficiency and wise direction of the effort of the many, and the proper instruction of the many, depend.

Secondary education, dealing as it does necessarily, with but a section of the community directly, is peculiarly liable to be regarded as of little *general* importance. And just in so far as public education falls short of organic unity, just in proportion as there is failure to properly co-ordinate every branch of education, so is there a want of appreciation of this truth, viz., that not only is the excellence of elementary education dependent upon the character of the highest branches of education and particularly upon the secondary system, but industrial and commercial efficiency are also similarly dependent.

In

In the Interim Report it has been shown that the thoroughness of the primary teacher is determined by the degree in which he benefits through instruction from higher grade trachers, and it is because of this that *elementary education is so profoundly affected by the thoroughness of higher education*, when, as it should, it comes directly under the influence of the latter.

Owing to the independence of the elementary education supplied by the State, and the private character of secondary education, there has been no tendency toward the general organisation of the State system, and no development of traditions by which secondary education could be assigned its normal and proper status, and allowed to influence the educational policy of the State. The endeavour to organise it now, may be bristling with difficulties, owing to vested interests, and to the extent to which English traditions have influenced its development. It may be conceded that an immediate reduction to system is impossible. But no one who understands the excellence of European Education, who perceives its dependence upon organisation, and who has any interest in the education of his own State, cannot rest content with a *laisser-faire* policy. It is not impossible to take the first steps towards organisation, as will later be shewn. To take these steps, however slightly they advance towards the end in view, is not unimportant. Not to do so, is to leave the future of Education in our State to grow haphazard, and when we wish to amend, we shall find, as has been found in England, that its proper organisation has become practically impossible.

6. *Difficulties arising from the Scheme of Educational Administration.*—Some of the most serious difficulties in the way of reform, are intimately connected with our scheme of educational administration. It is only because we have never attempted to organise all educational effort in the State, that these difficulties have not become more apparent. We have never really faced the general problem as it has been faced in Europe.

If, as stated, it be true, that absence of method is responsible for many of our grave deficiences, then it follows also that a few changes in our educational scheme, however excellent those changes may be, cannot be compared in importance with *a well-defined objective as to the form in which education is to develope, so that its whole organisation shall ultimately become harmonious and thorough.* This last is essential. If we are satisfied to drift along, merely making improvements here and there, without reference to their connection with a well-developed scheme, if we simply give effect to the individual opinions of successive Ministers of Education, *we shall merely repeat the experience of Italy, and can never have Education equal to those countries whose educational systems are the outcome of thorough criticism and continual review by educational experts*, and whose educational policy is not of the *de die in diem* character, but has a wide purview, and is characterised by *foresight.* As stated, Italy affords an example of the disastrous effect of Ministerial variation of educational policy. (See Chap. XXV.) The perpetual flux of the system makes it inefficient, and much of its excellence is in spite of, rather than due to, the action of successive Ministers. It must be noted here that the question of the necessity of administration under a Minister of the Crown is, of course, not raised.[1] What is pointed out is that, as a rule, Ministers for Education cannot be seriously regarded as educational experts. An expert must necessarily possess the qualifications of a specialist, and a Minister of the Crown, *as such*, can no more be regarded a specialist in Education, than he can be supposed to be one in Medicine, Law, Engineering, etc. *The popular notion that anyone can understand education without systematic study is a delusion.*

The Educational System of the State must therefore be *deliberately developed* and remain, not exactly constant, but subject to such changes only as are necessary to its healthy organic growth. And it must embrace the consideration of all forms of education so that they may be properly co-ordinated.

7. *The significance of co-ordination.*—At the present time youths are accepted at the "Technical Colleges" of the State, and at the "Agricultural Colleges," whose educational attainments are in some instances of the most meagre character. Hence, if the instruction be that best suited for the more advanced, it will be inappropriate for these; if, on the other hand, it be appropriate for the indifferently prepared, the more advanced will be sacrificed. In Europe these disadvantages are avoided.

In a thoroughly co-ordinated educational scheme, the necessary propædeutical studies for each and every course are defined, and each student enters upon any particular course only after going through these.

This illustrates the necessity, pointed out in the Interim Report, for a proper co-ordination of every part of an Educational System.

8. *Steps which may be taken toward Reform.*—If conformity to a particular régime were rewarded by certain concessions as to the educational status of pupils, much would be done toward bringing private secondary schools under a co-ordinate system. Schools agreeing to employ only teachers of approved qualifications, and to adopt a detailed curriculum of studies, might (as in Europe) be allowed to practically hold their own examinations, say, for matriculation, etc., under the superintendence of a suitable departmental officer. Such schools could be specially authorised. It would be demanded that they should conform in their courses of study to definite curricula; their teachers would be required to have attained a prescribed standard of education and professional training as teachers. This would dispense with the necessity for "cramming," at least in such schools as acquired the privilege. The method has sanction in European experience. It would be a beginning in the right direction, viz., the passing from the examination held by appraisers, whose decision has to be made on examination results alone, and not upon these together with the school record.

It would be a step, also, toward the régime under which the University could work on a higher plane. And though it is one which involves the creation of, to us, a new ideal, it is the only way in which we can attain to the excellence of the European systems of thoroughly-organised education, ending in the certificate of maturity, the baccalaureate in arts, the licentiate in science, or whatever term corresponds to the lower form of graduation known to us as the bachelor degree. That is the truest form of matriculation for a University; for the student enters its portals properly prepared, and really ready to profit by the courses through which he is to pass therein.

With

[1]Administration of an Education Department by an expert Commission would obviate some of the great disadvantages of the present system.

With a view to approaching this end, and to bringing about the proper co-ordination of secondary education, it is desirable to induce the best secondary schools to entertain the question of a definite and wide recognised curriculum, and to voluntarily make returns affording the following items of information, viz.:—

(1) The members of the regular or resident teaching staff, and their professional qualifications for teaching.
(2) The same in regard to the visiting or occasional teachers.
(3) The detailed programme for every course of study which may be pursued by the pupils of their schools, shewing the part (if any) common to all course, and the individual courses, distinguishing also between obligatory and optional subjects.
(4) The time-tables shewing the detailed organisation of the teaching.
(5) The detail of the pædagogical equipment of the school, shewing what portion is systematically used in the teaching.
(6) The type of seating accommodation, and the extent to which the requirements of modern school hygiene are met.
(7) The floor-space, cubic content, and window area of the class-rooms used for teaching, together with the actual dimensions, and the number of pupils for which they are designed.
(8) The playground or recreation area.

Later, the supply of such returns might be made compulsory in the case of all schools.

Another important step, in which we should merely be following the example of England, is *the registration of the entire teaching staff of secondary, indeed of all, schools.*

A further step, and one which is of fundamental importance, is to promote in every suitable way a study of the organised systems of education of Europe, so that the essential difference between them, and the forms of secondary education in England and Australia may be understood.

This report may be regarded in the light of a first contribution thereto.

The ultimate step, the final aim of the whole movement of reform in secondary education, is to free the University from being under the necessity of holding mere entrance or similar public examinations, and of securing a higher degree of preliminary training in the students who enter it. Then, and then alone, can it work on the plane which gives it the essential character of a University, and then alone will it be free from the necessity of spending some of its energy on merely elementary teaching in science.

9. *Conclusion.*—The common opinion that we have no direct and national interest in secondary education is one that can coexist only with a failure to understand the significance of the co-ordination of education, and with blindness to the teaching of educational history in Europe and America. *Our primary schools will never be what they ought to be, unless we systematically bring the teachers thereof, during their professional training, under the influence of the knowledge which can come from a secondary school.* This is absolutely essential to the efficiency of elementary education, as has been shewn in the Interim Report.

The real significance of a good secondary system is that it enables both the lower and higher forms of education to achieve their ends. It is a necessary link in the educational chain, or to change the figure, an essential feature in the whole mechanism. If we neglect it we place ourselves in opposition to the educational traditions of the whole of Europe and America, that is to countries where the lowest and highest forms of education reach a plane far above what is achieved here, and where the industrial and commercial activity is more thorough and where the fruits of education confer efficiency in the field of industry, commerce, and general activity.

The Commissioner writing is aware that the ideal which he is attempting to create differs from the popular view, but this is justified by the awakening sense of deficiency which is giving the greatest educationists of England deep concern. What has been learnt in Europe, and in many States of America, and is being learnt in the mother country is, that secondary education is an essential feature of public education, and dare not be neglected by anyone who does not desire to see the State reduced to that mediocrity which would menace its very existence.

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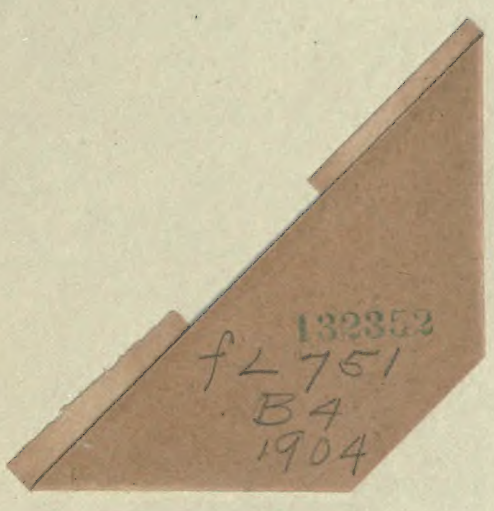
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